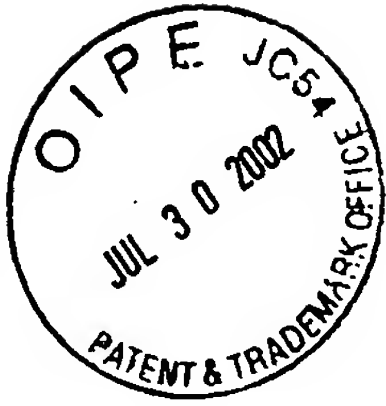


34/1



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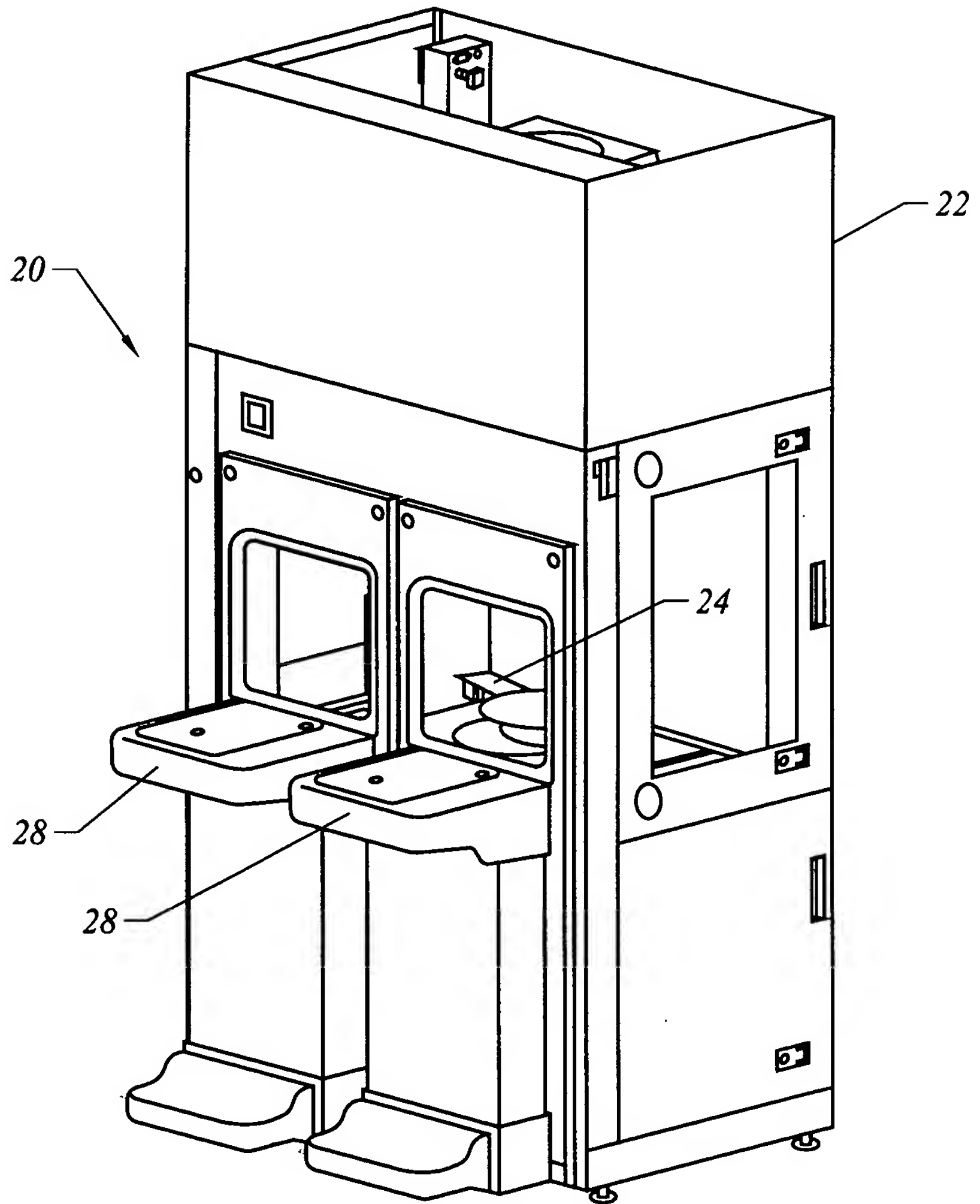
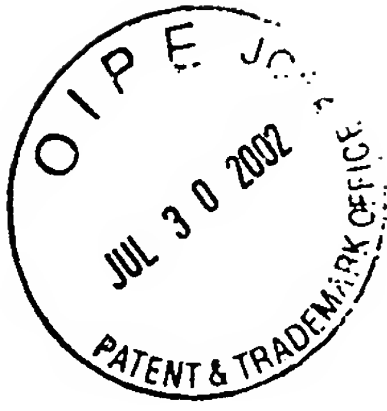


FIG. 1



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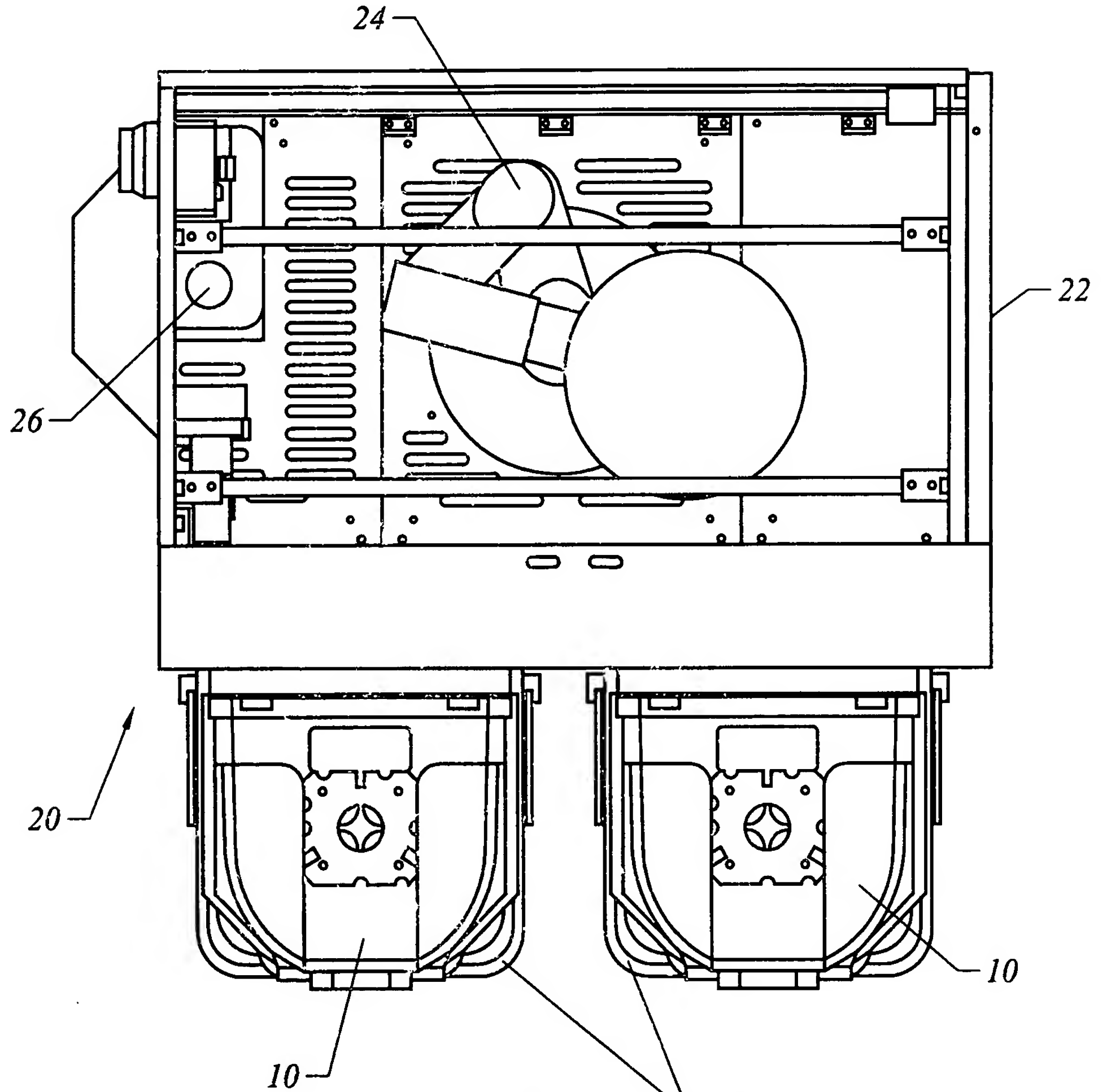


FIG. 2

20020326043001



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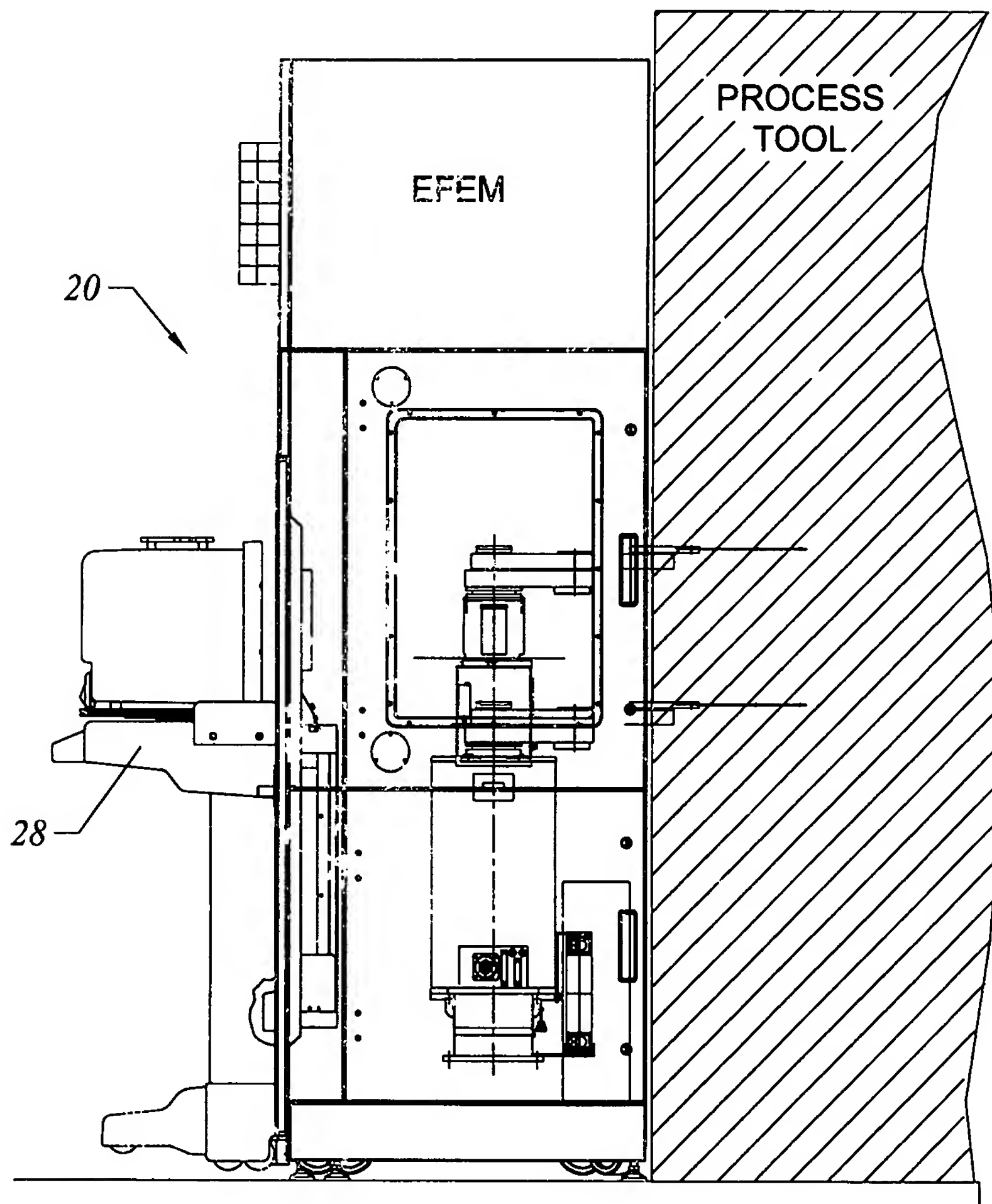


FIG. 3



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Serial No.: 10/087,092 Attorney: Scott D. San
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Sheet 4 of 34

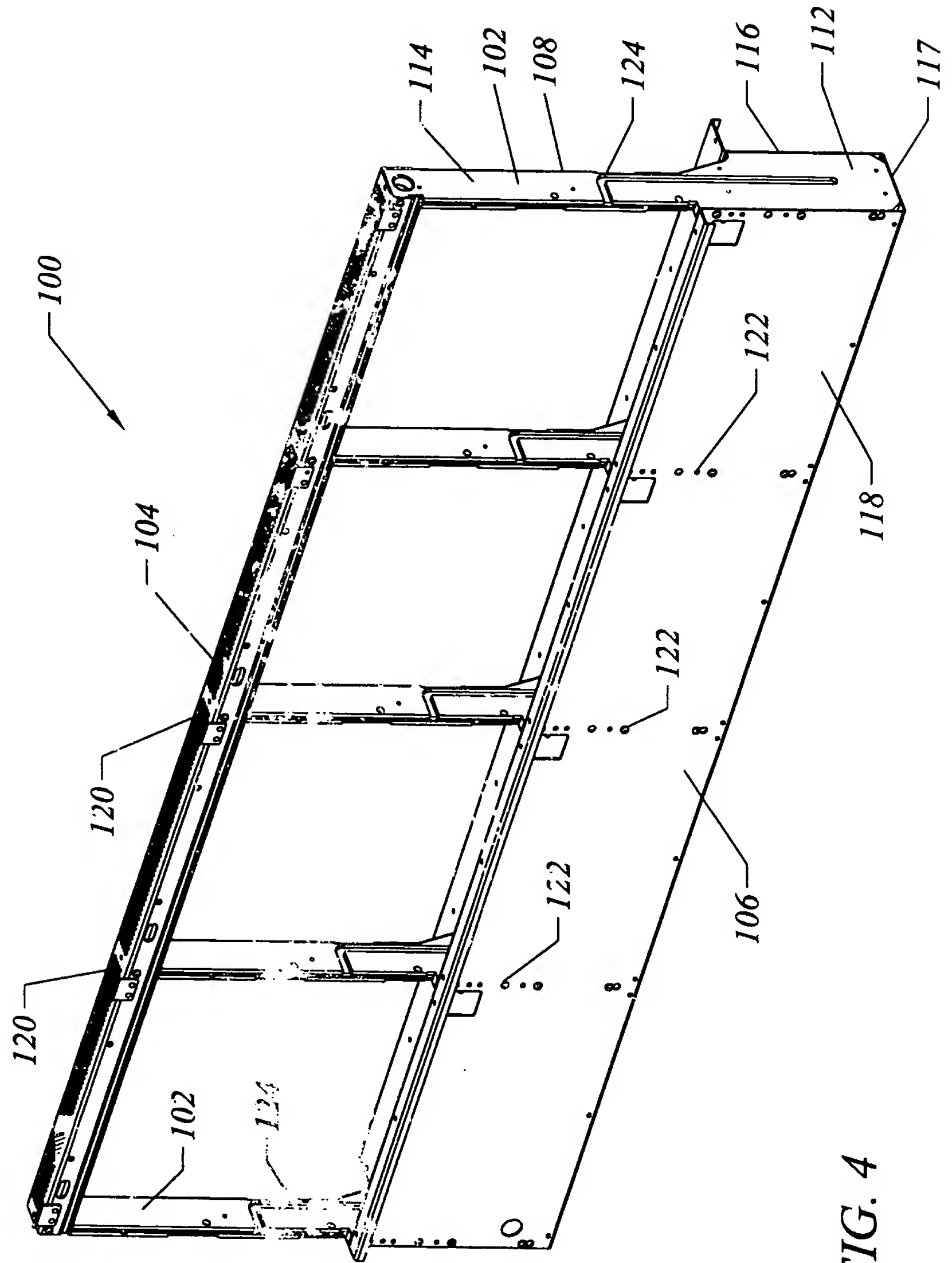


FIG. 4

A circular black and white stamp. The text "OIPE" is at the top, "JC64" is at the top right, "JUL 30 2002" is in the center, and "PATENT & TRADEMARK OFFICE" is at the bottom.

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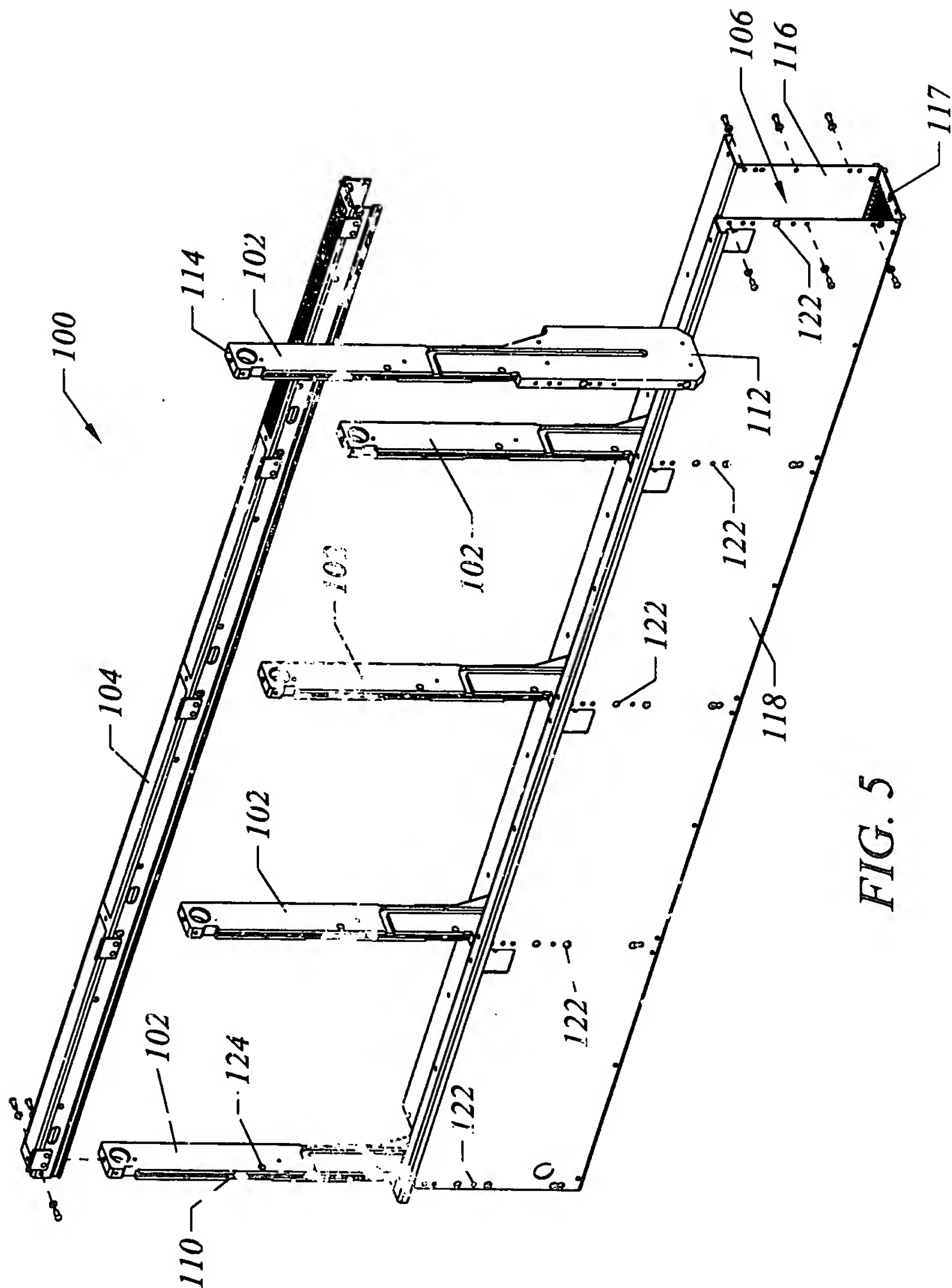


FIG. 5



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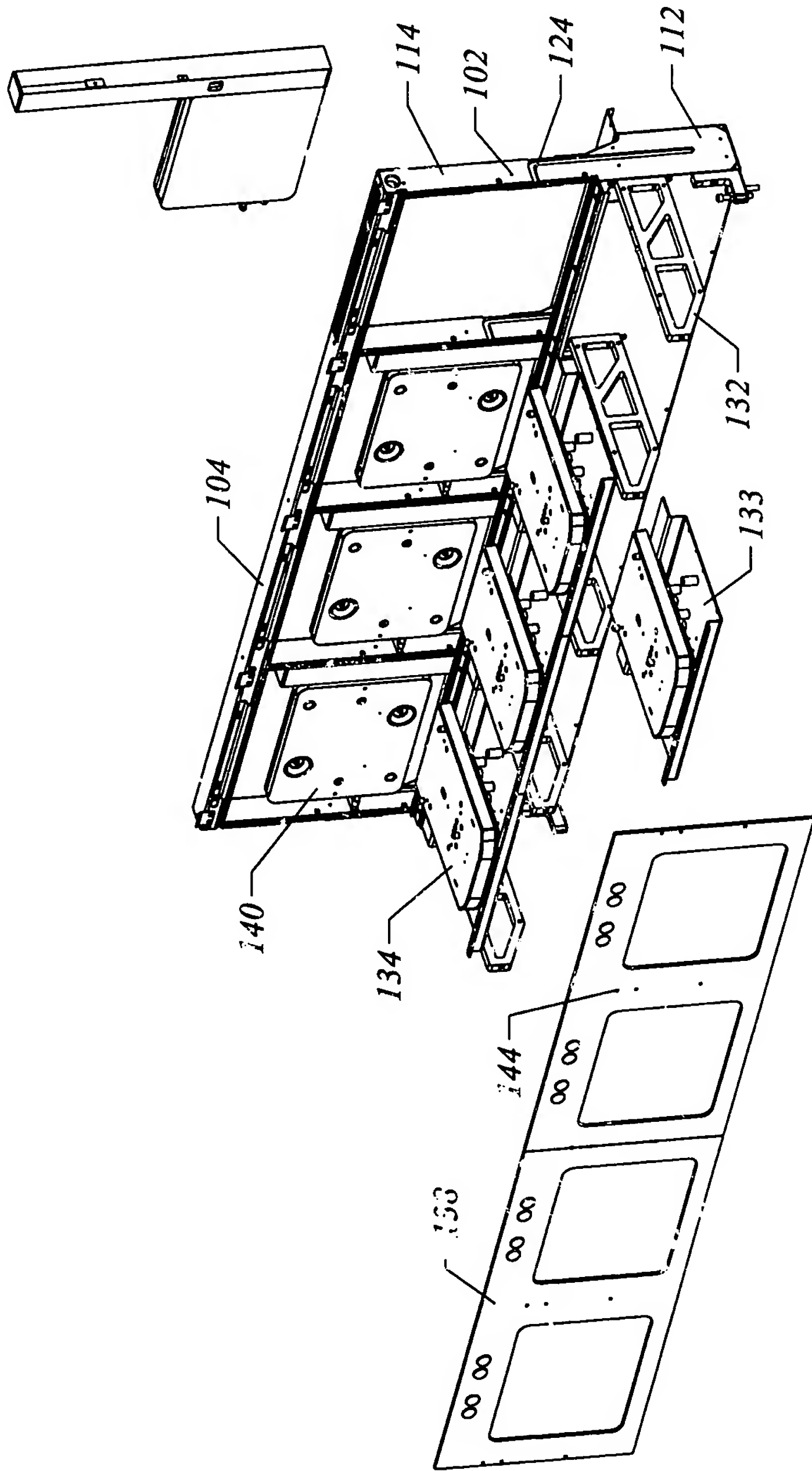


FIG. 7

20020301 26043001



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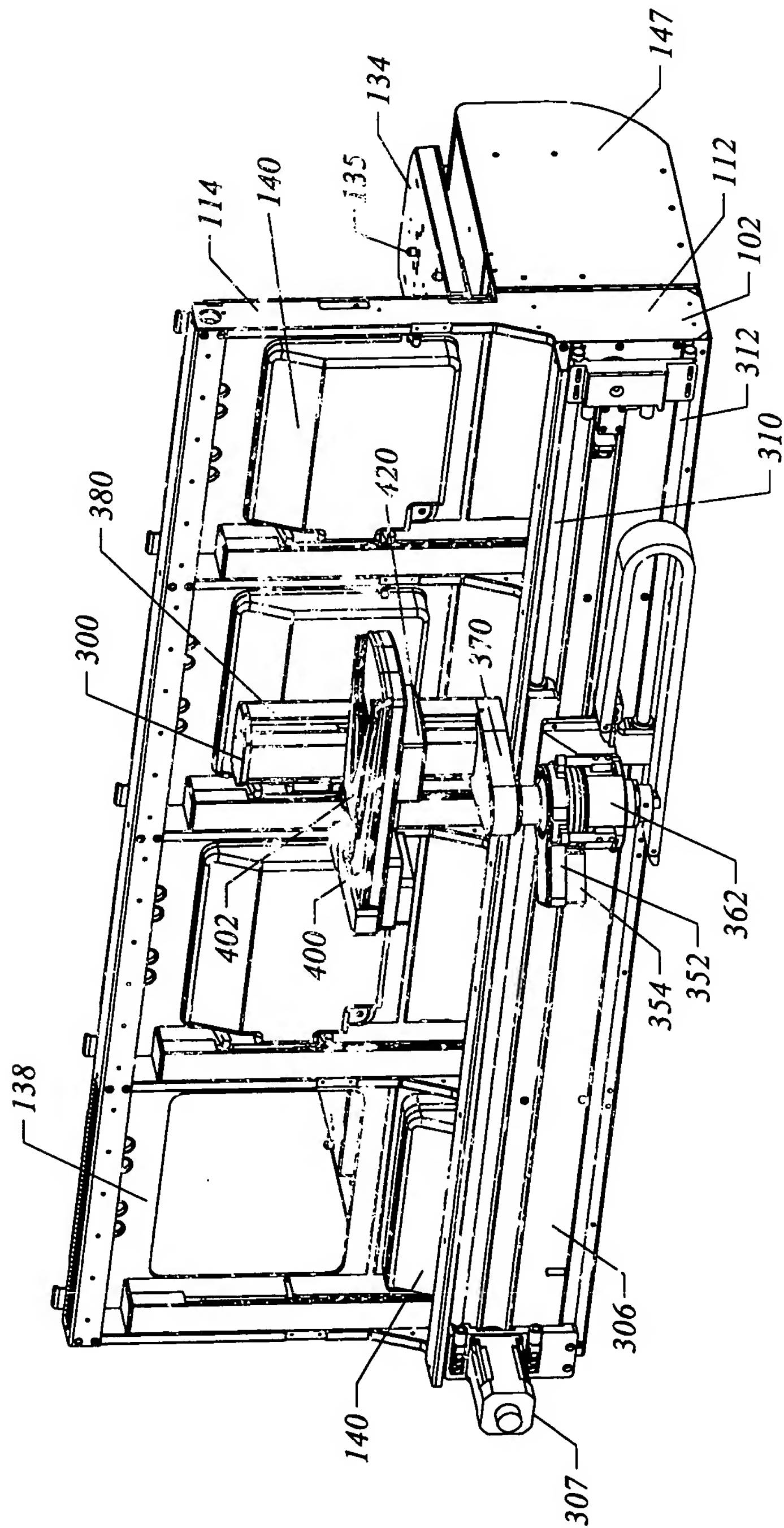


FIG. 8

20020301 260430T



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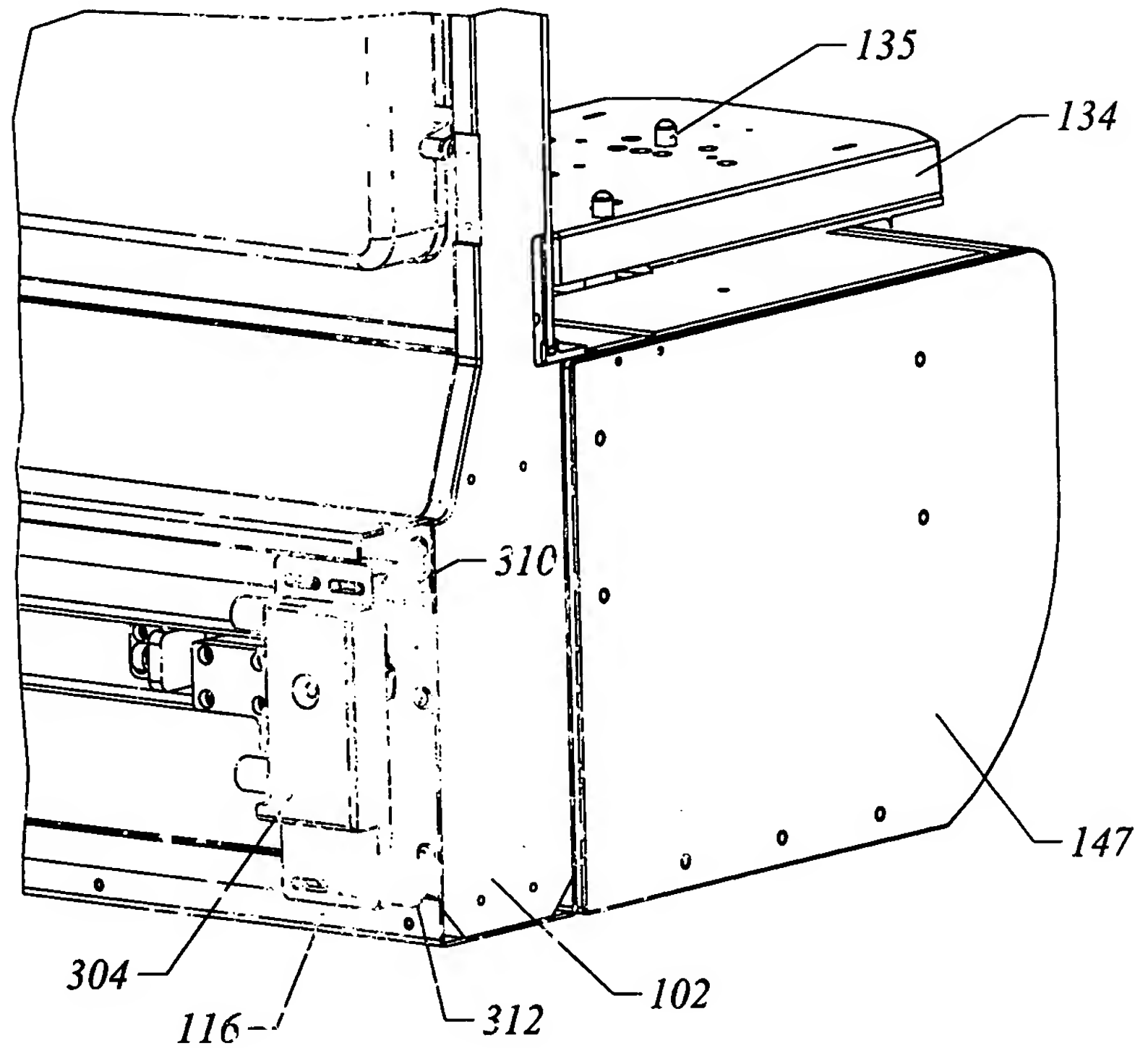


FIG. 9

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20020726048001



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Sheet 10 of 34

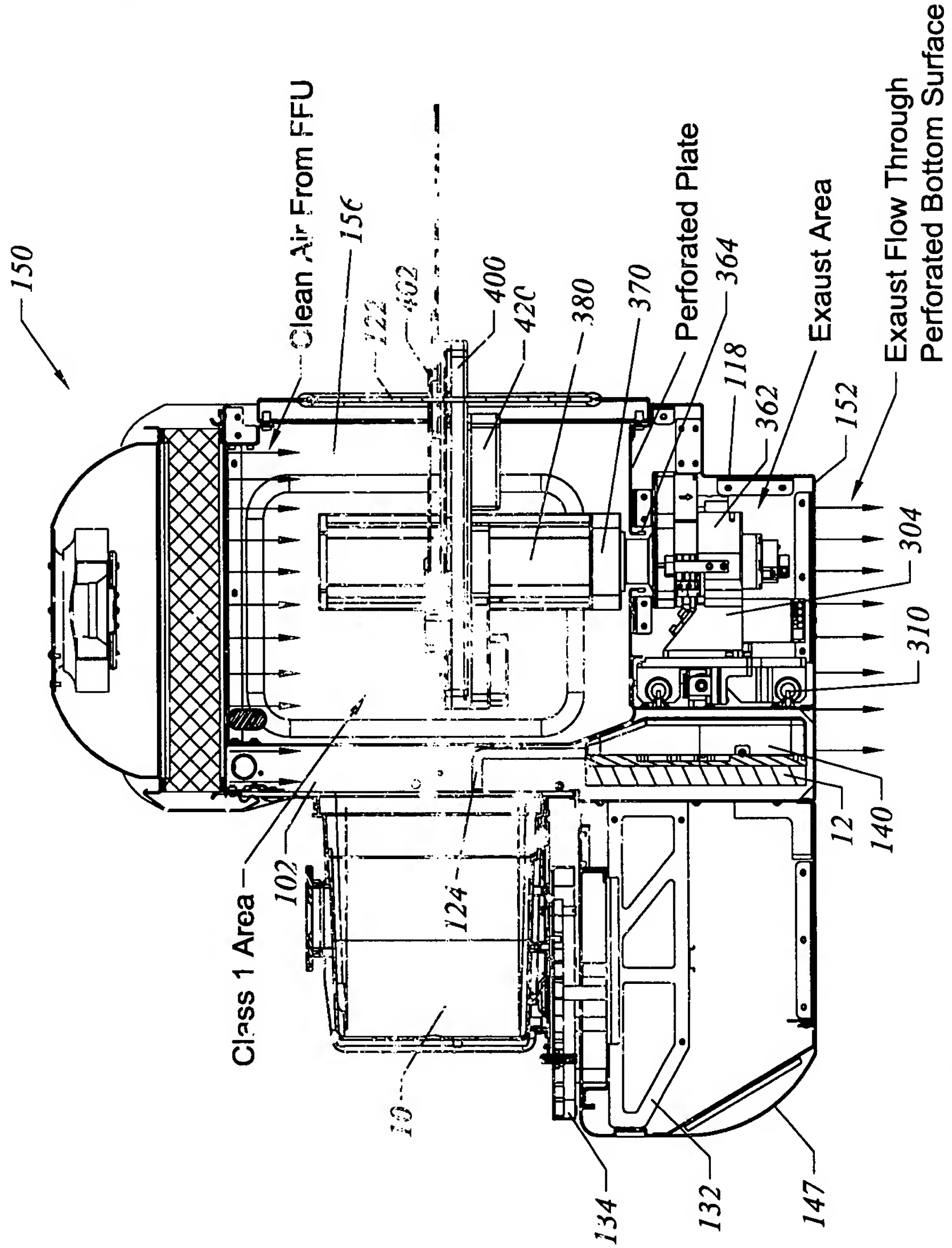


FIG. 10



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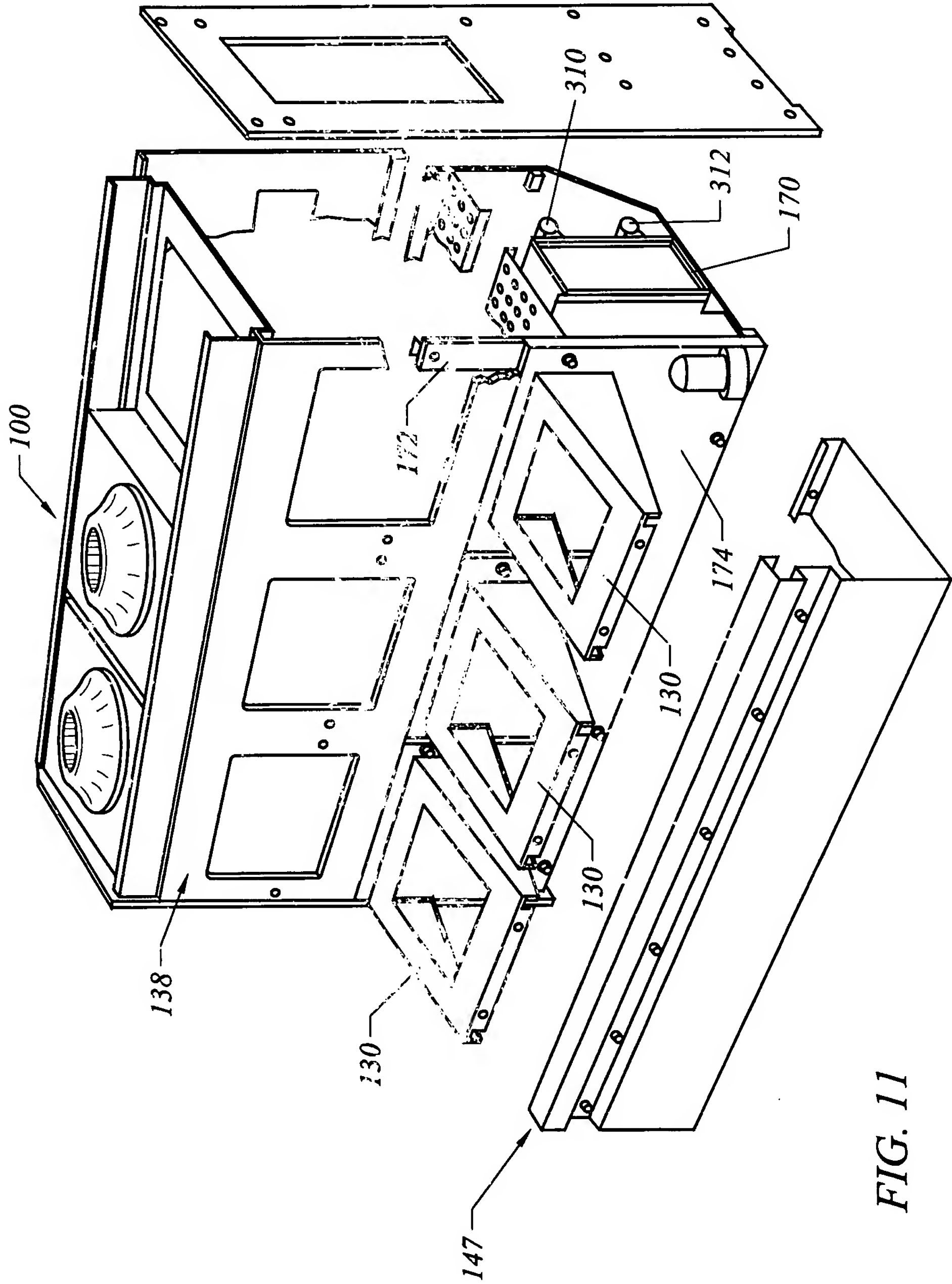


FIG. 11



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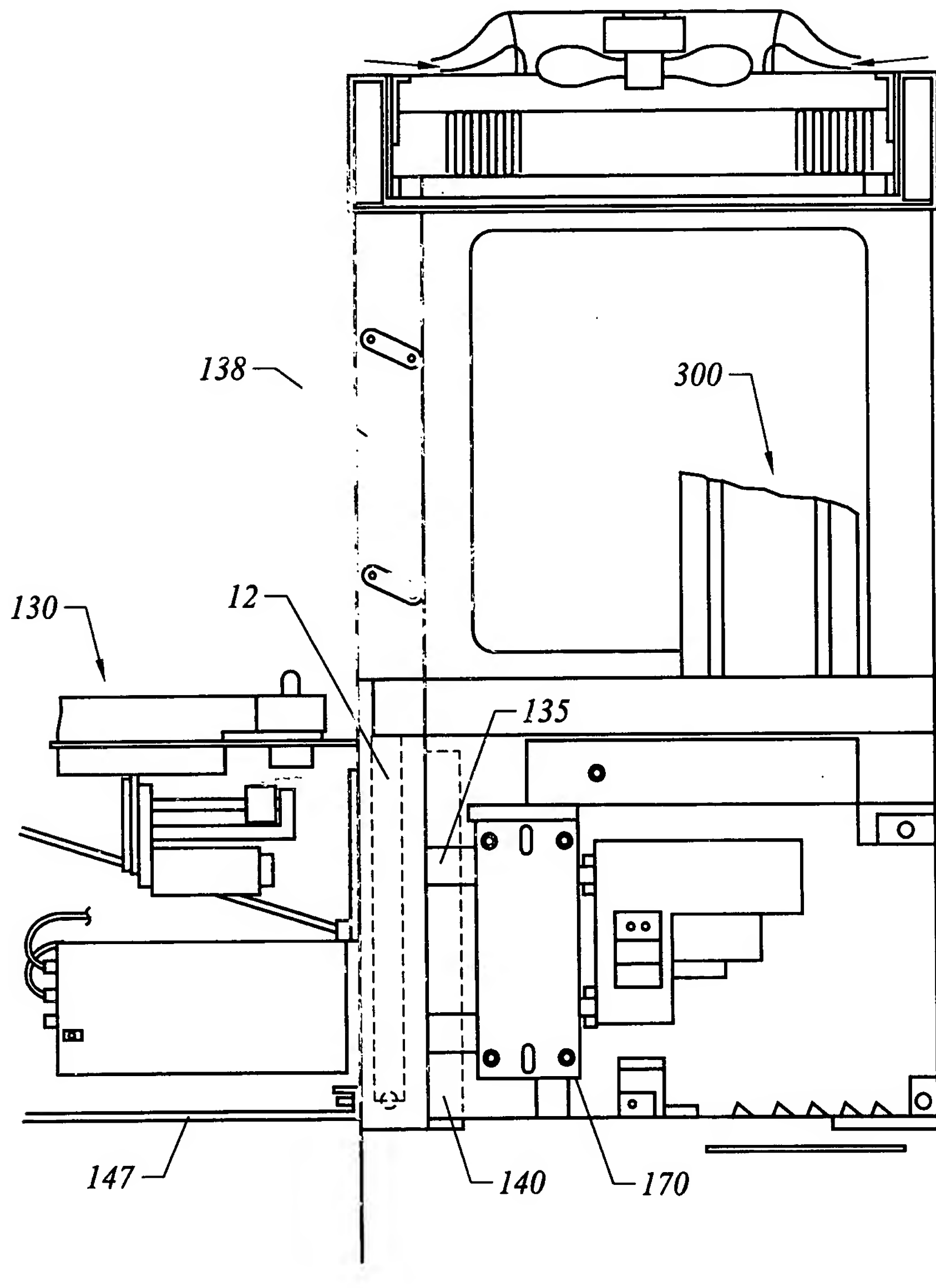


FIG. 12



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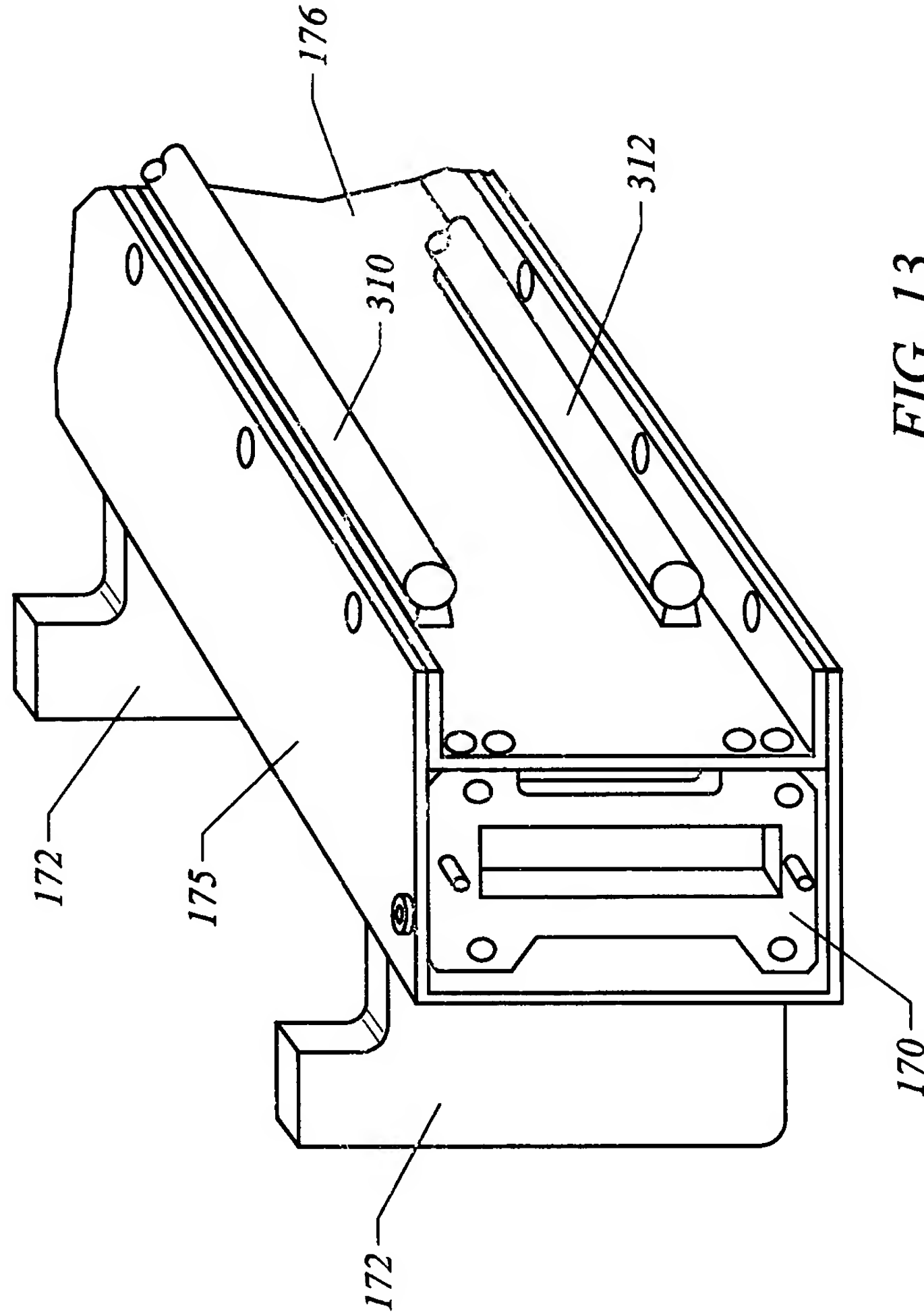


FIG. 13

20020301 26028001



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20020326023007

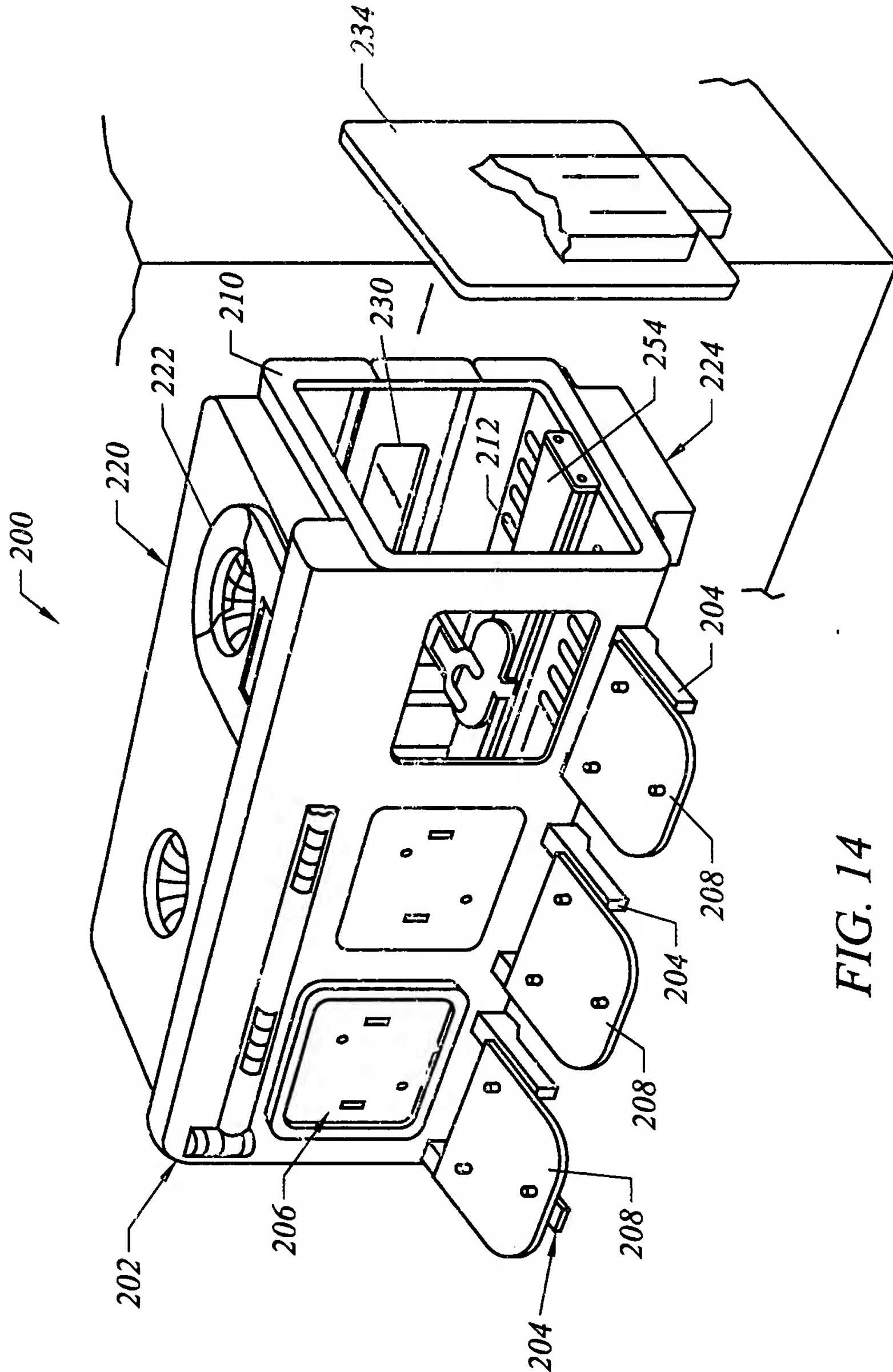


FIG. 14



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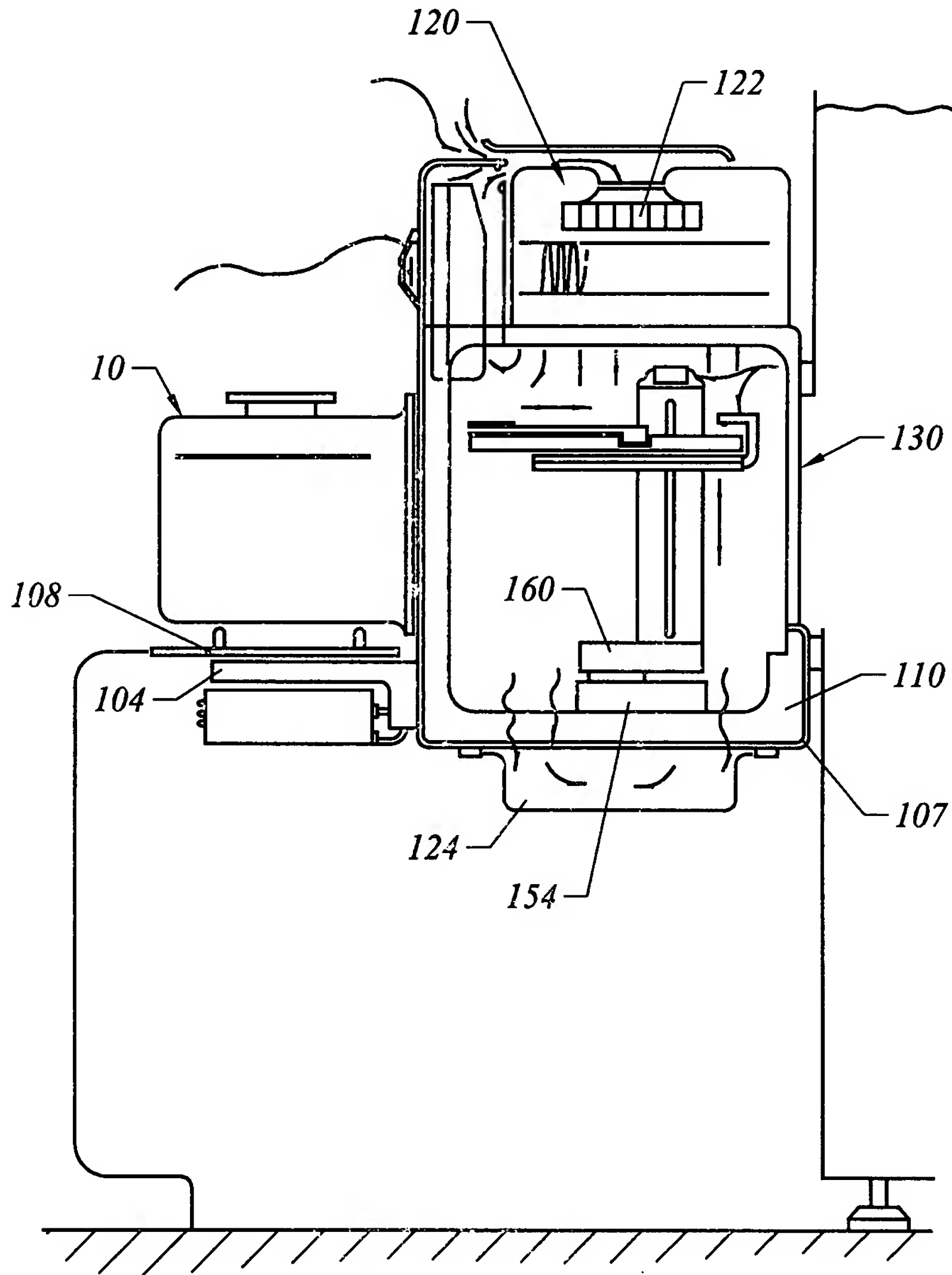


FIG. 15



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20020226028001

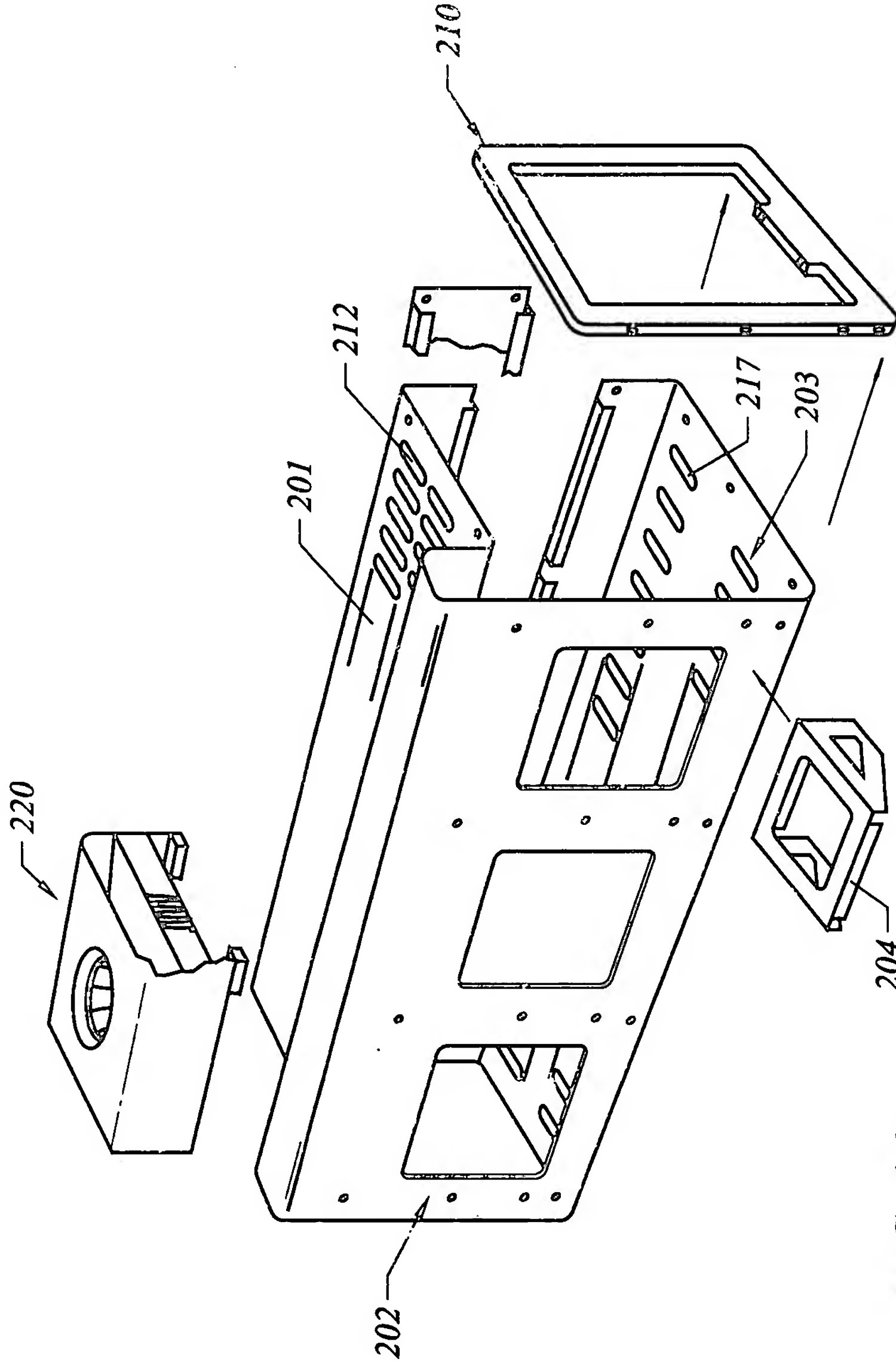


FIG. 16



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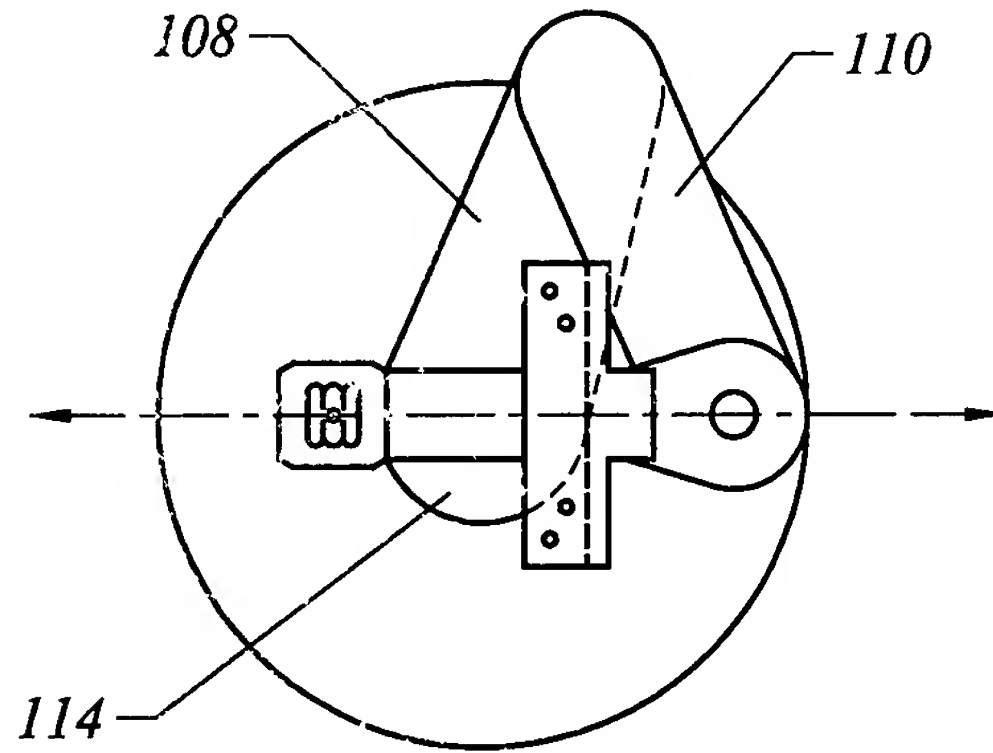


FIG. 17A
(Prior Art)

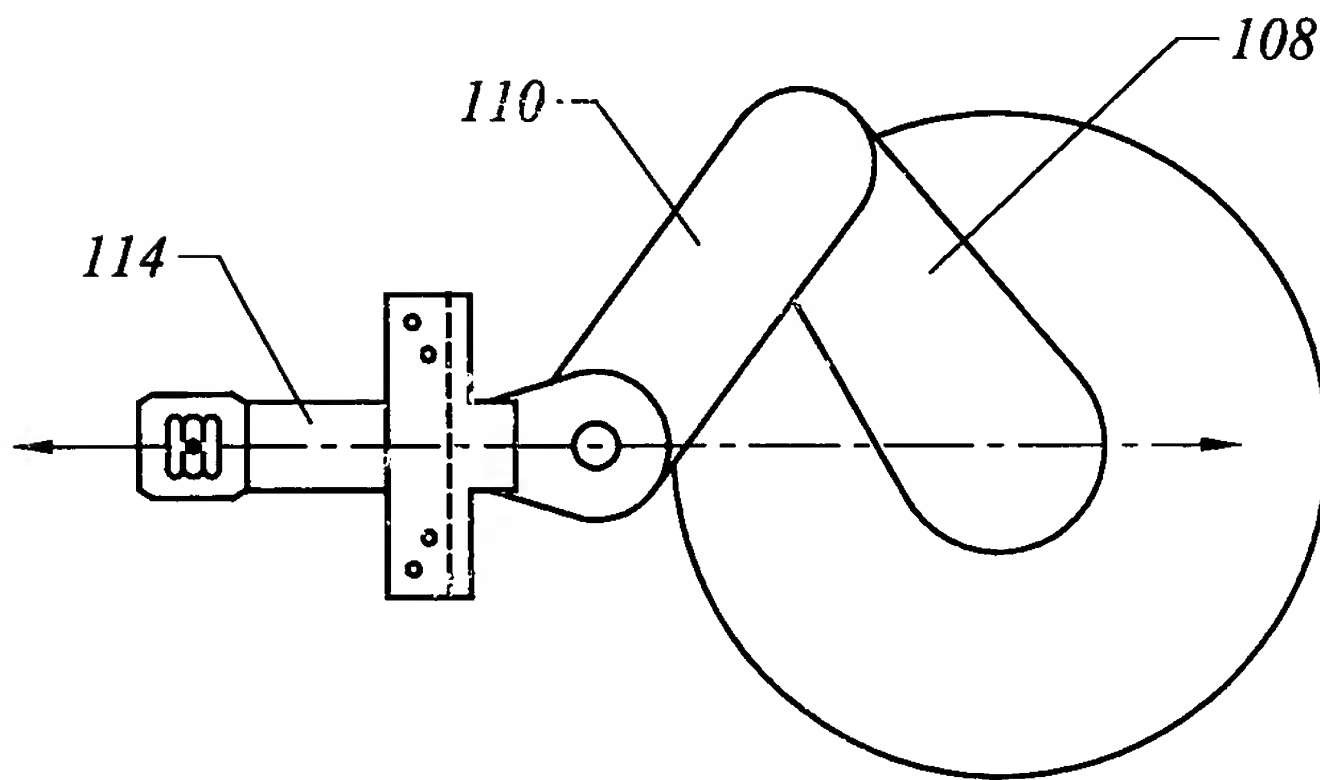


FIG. 17B
(Prior Art)

2002-03-01

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Serial No.: 10/087,092

Attorney: Scott D. Sanborn

Filed: March 1, 2002

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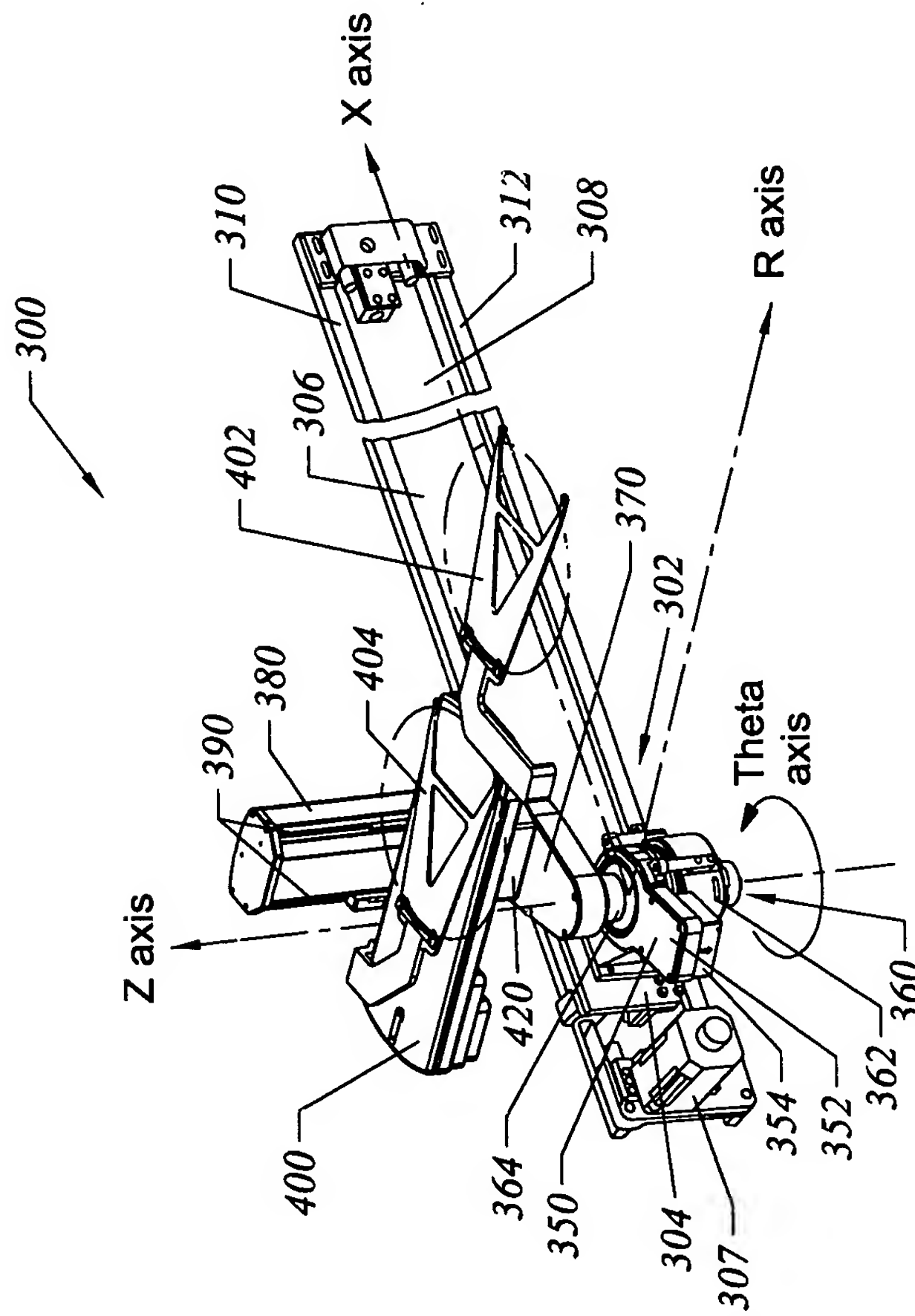


FIG. 18



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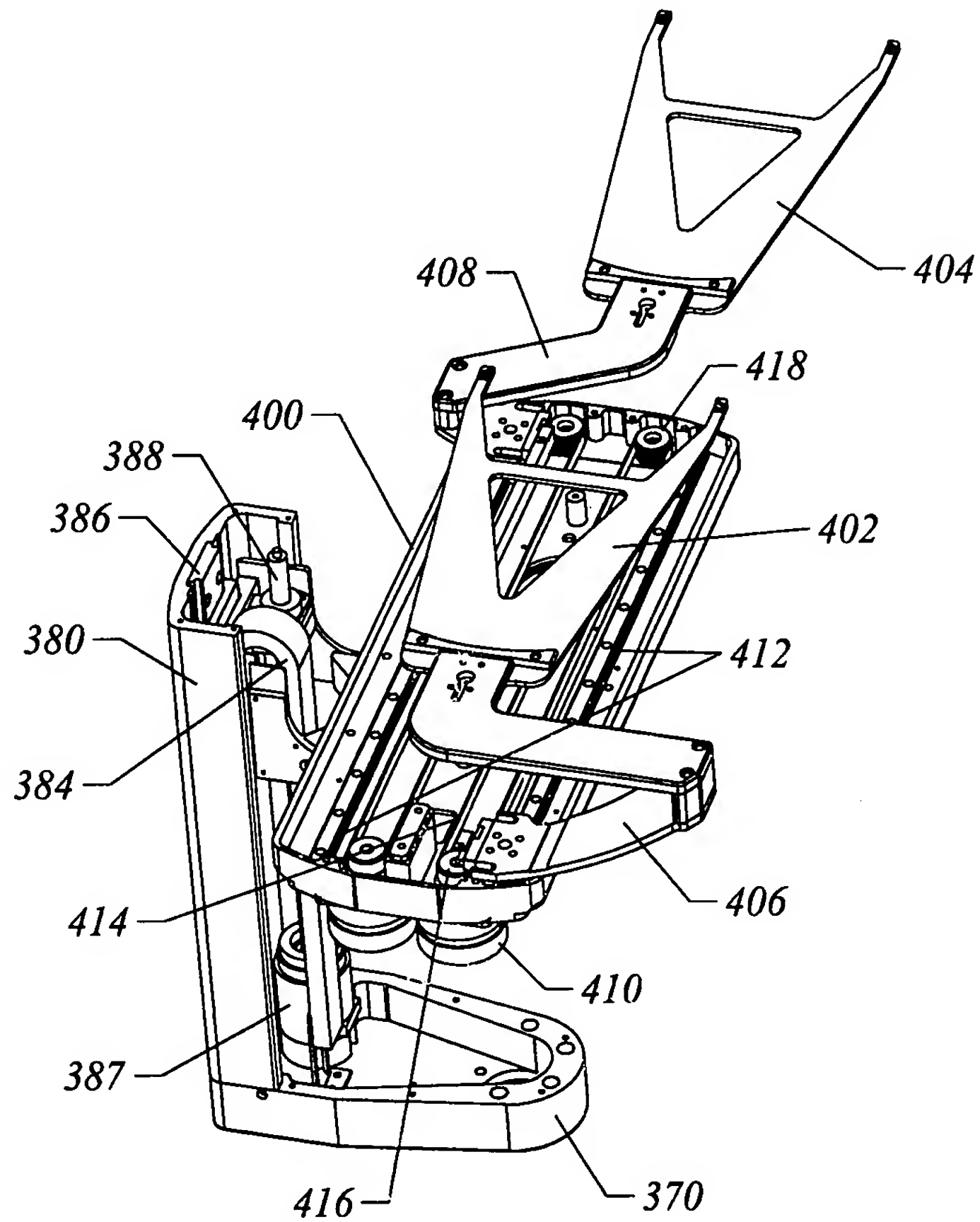


FIG. 19



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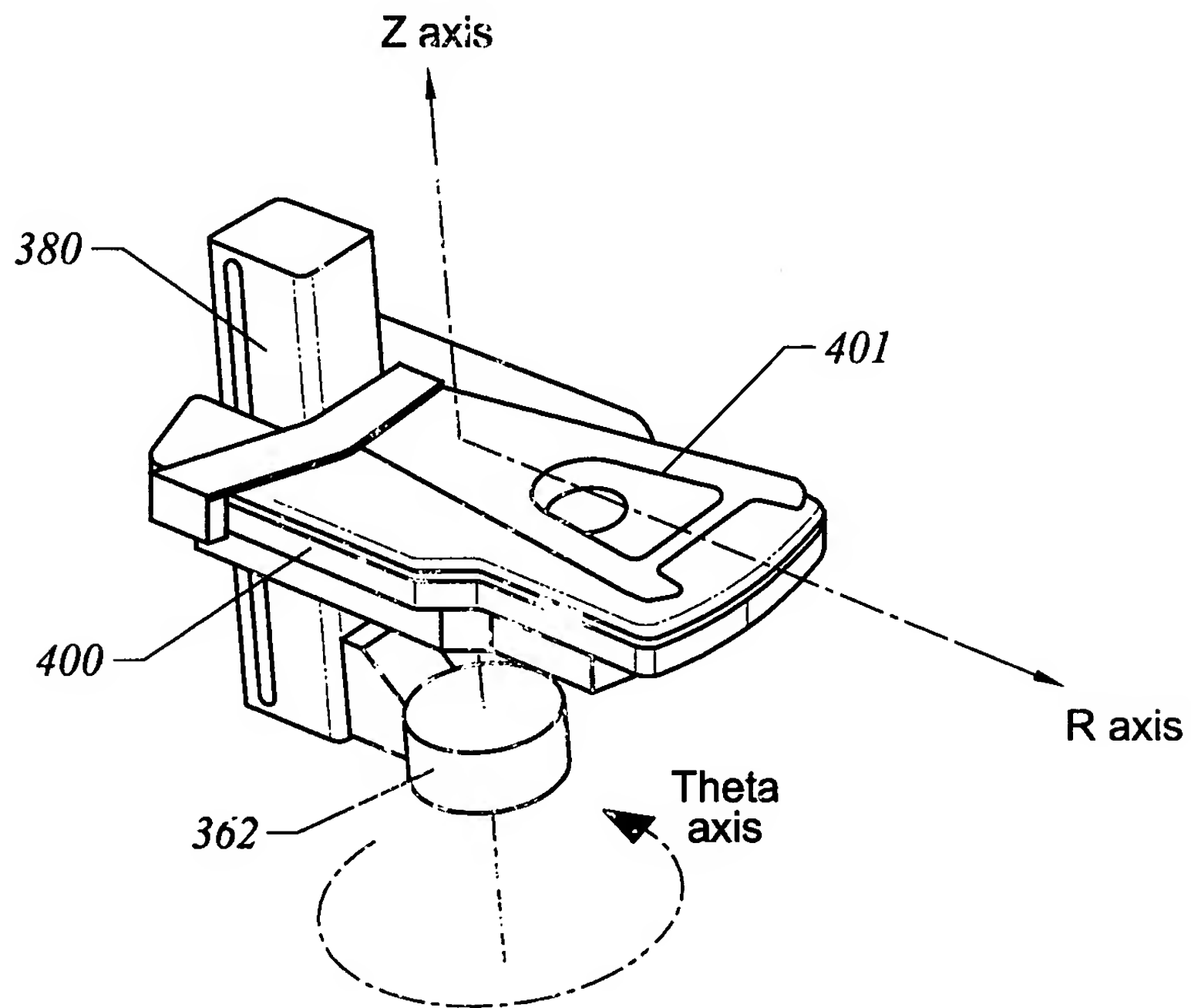


FIG. 20

10087092-073002



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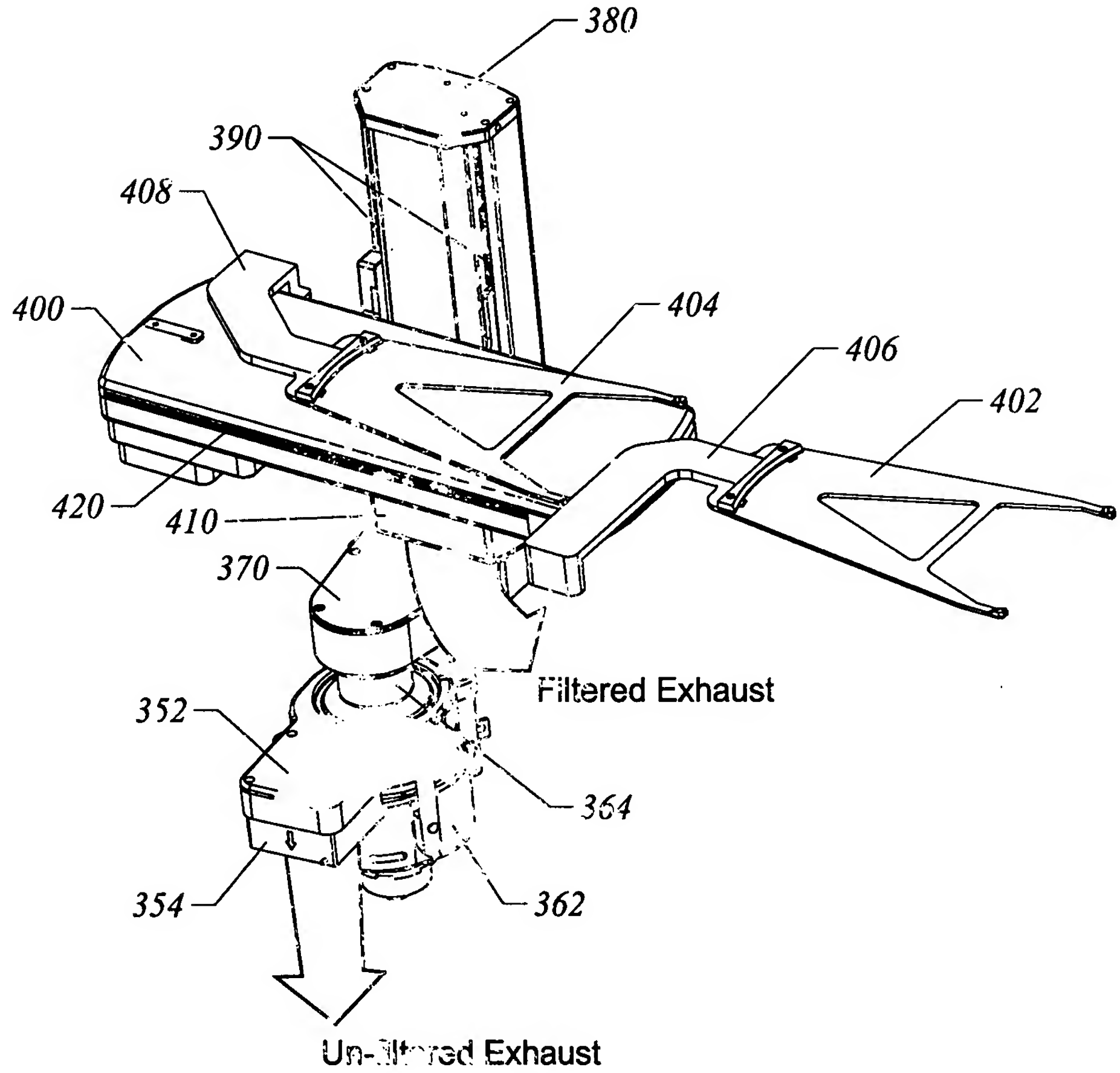


FIG. 21



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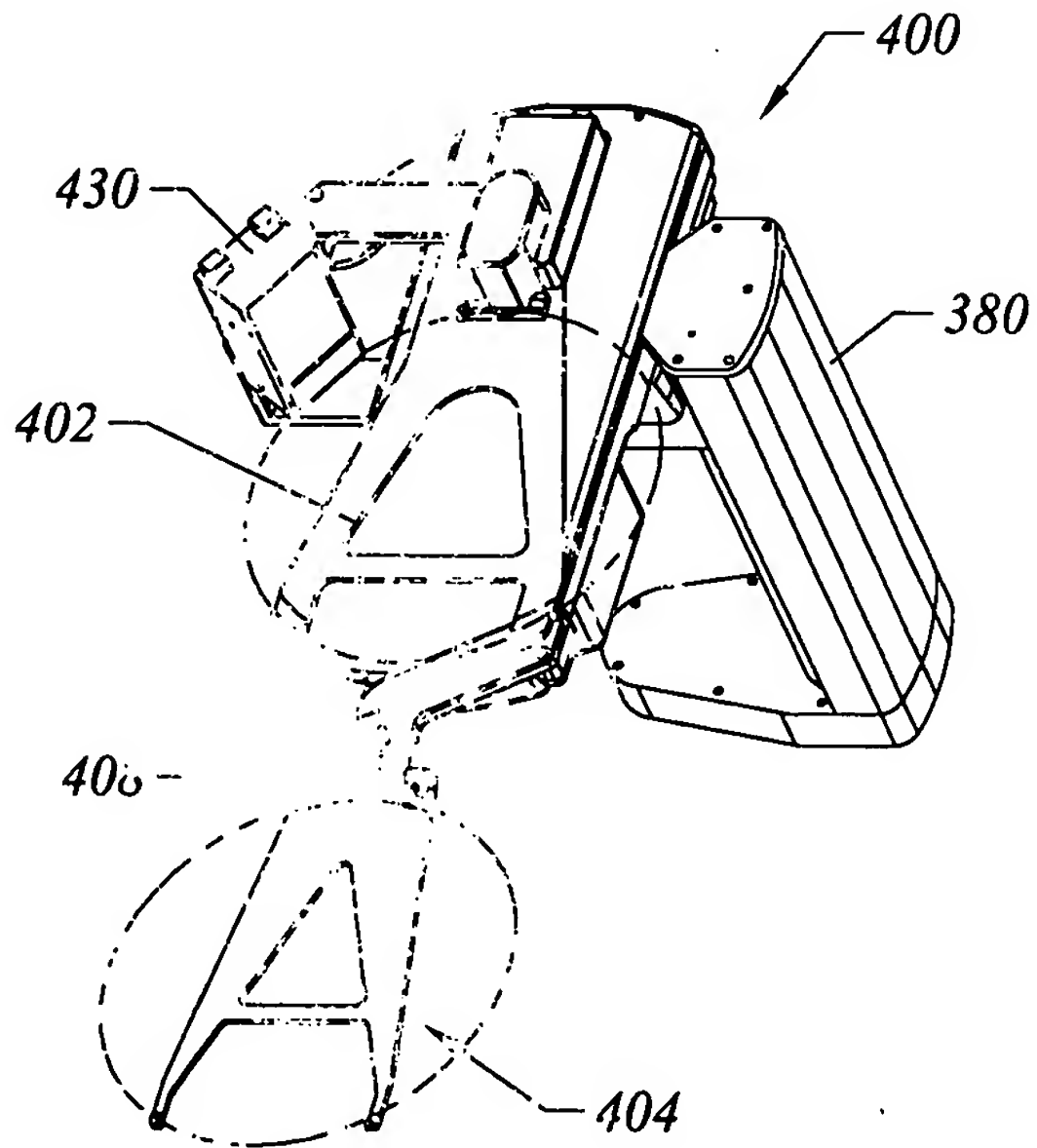


FIG. 22A

20087092-07302



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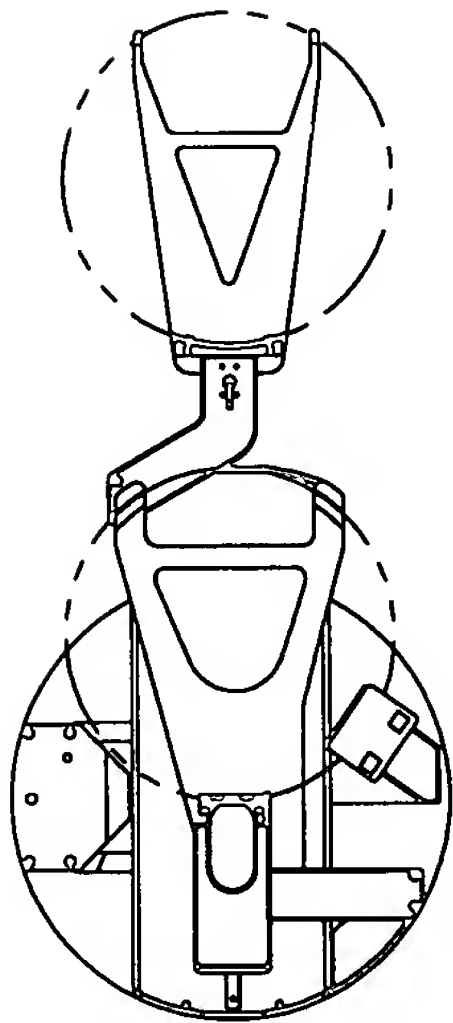


FIG. 22B

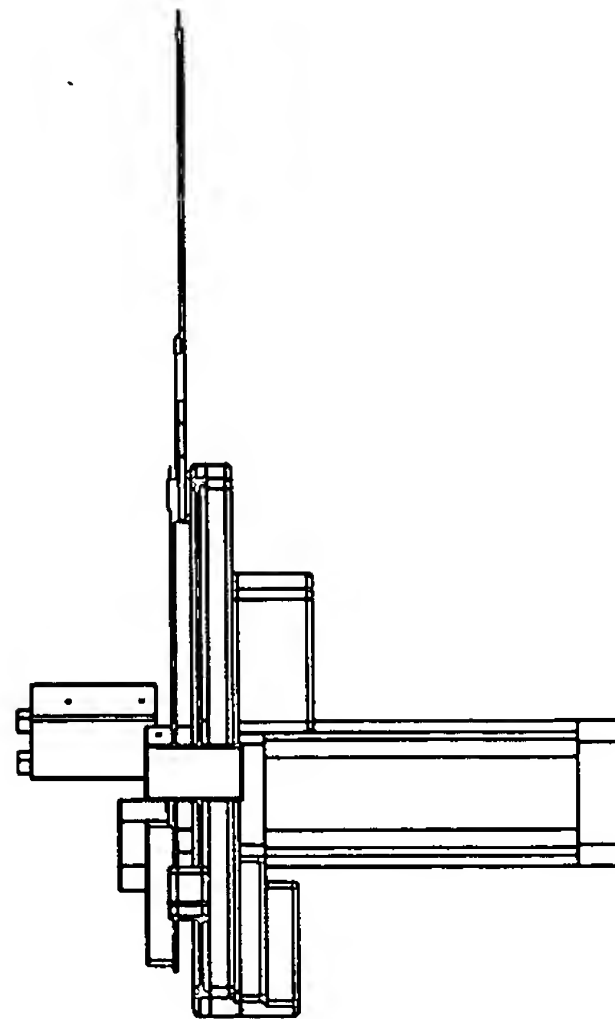


FIG. 22C

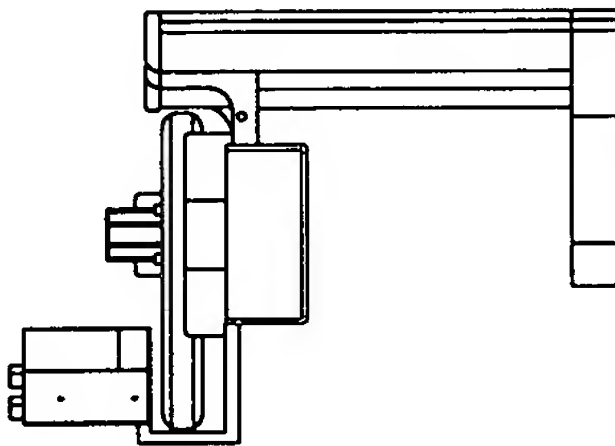


FIG. 22D

20020320 20020320



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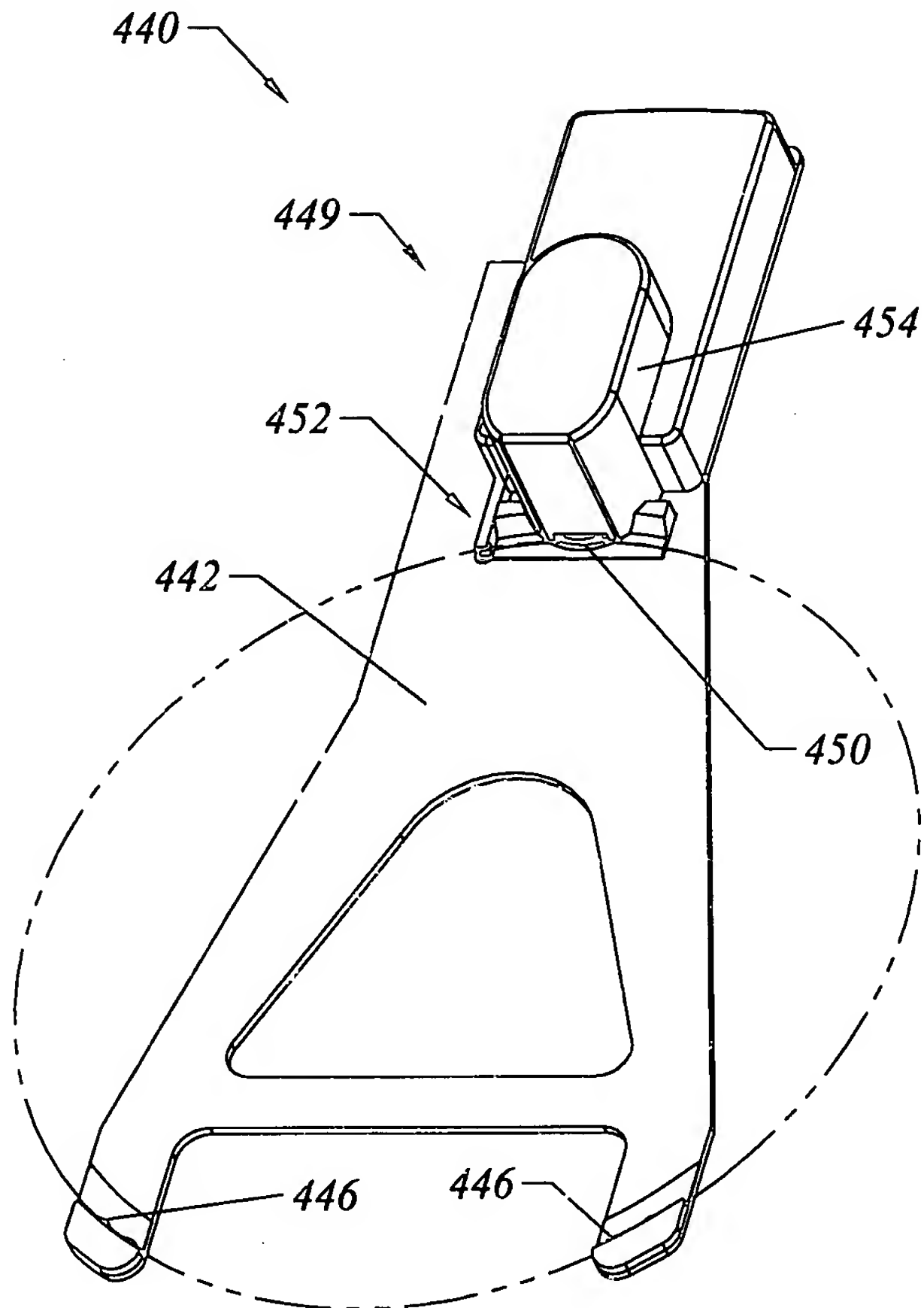


FIG. 23

20020301 10087092



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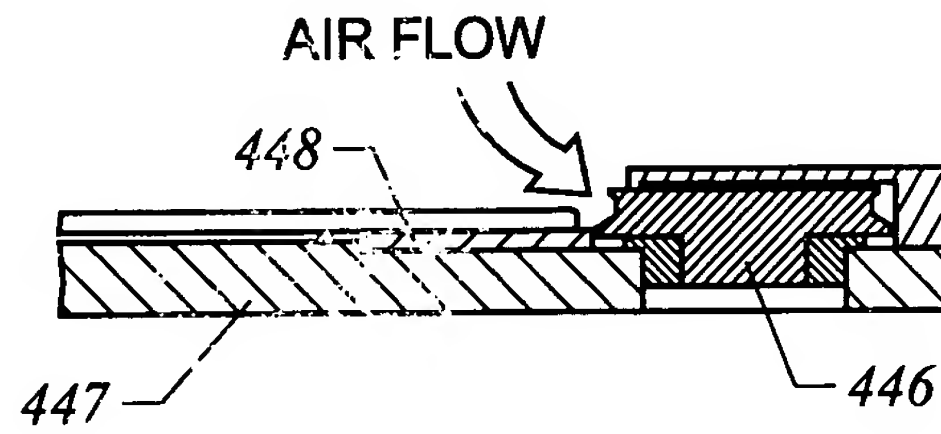


FIG. 24A

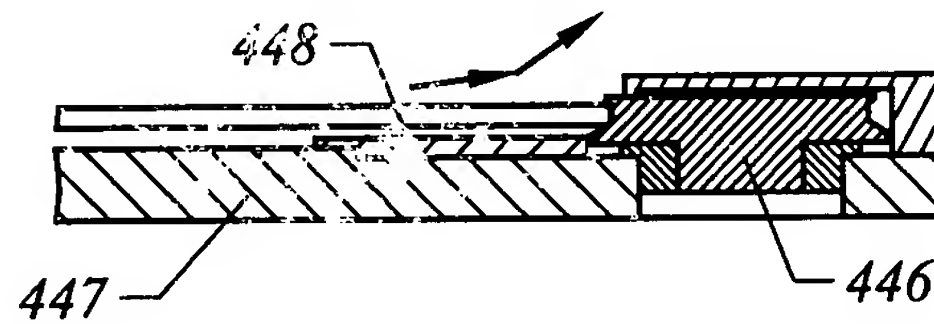


FIG. 24B

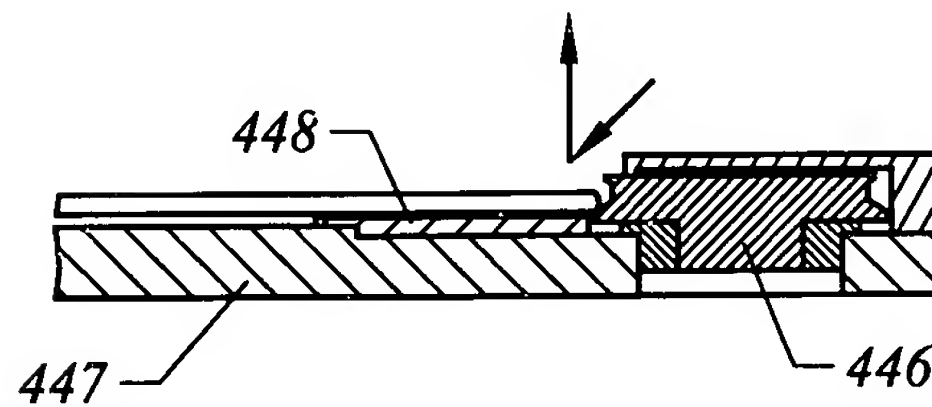


FIG. 24C

10087092-073002



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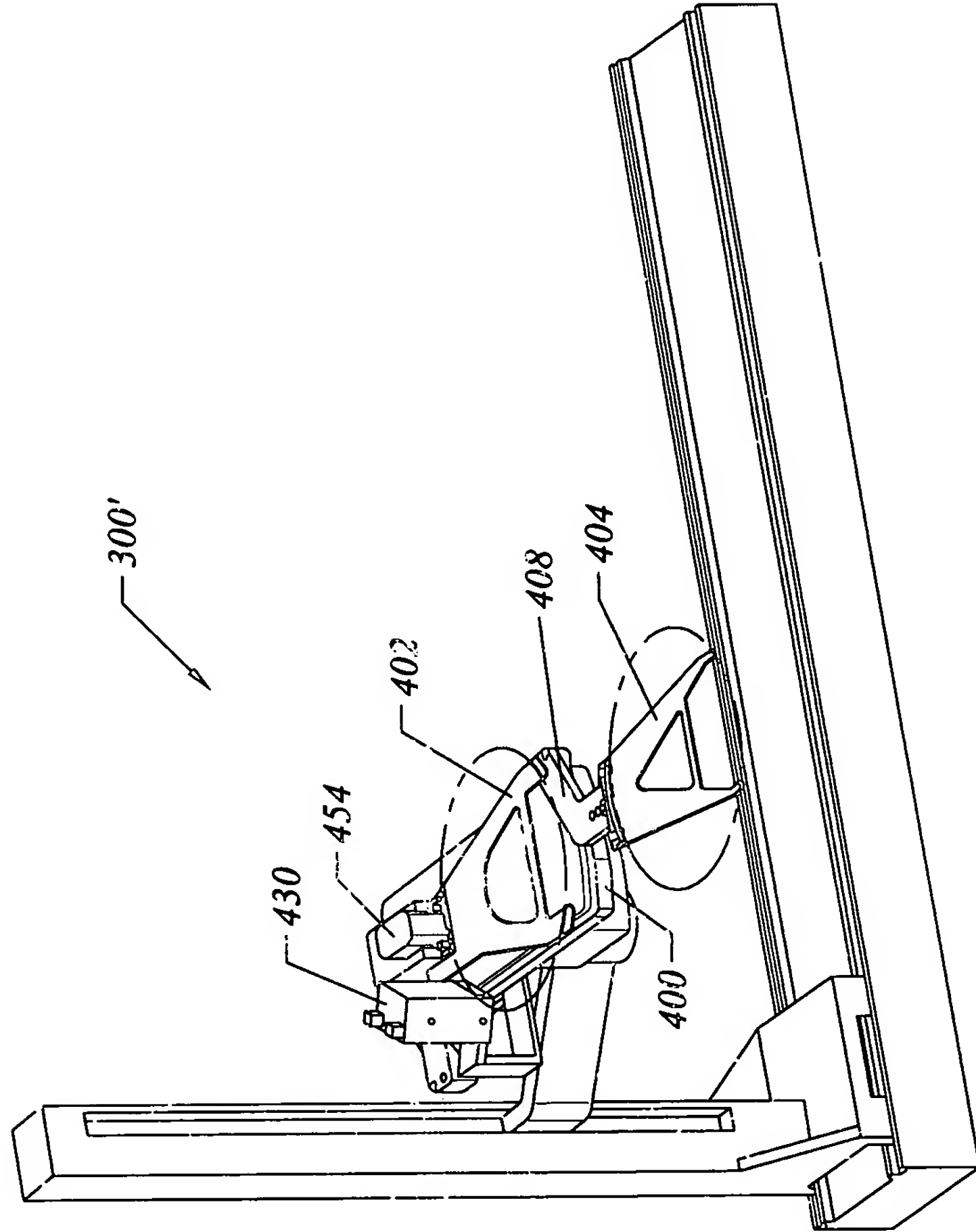


FIG. 25

20080226023001



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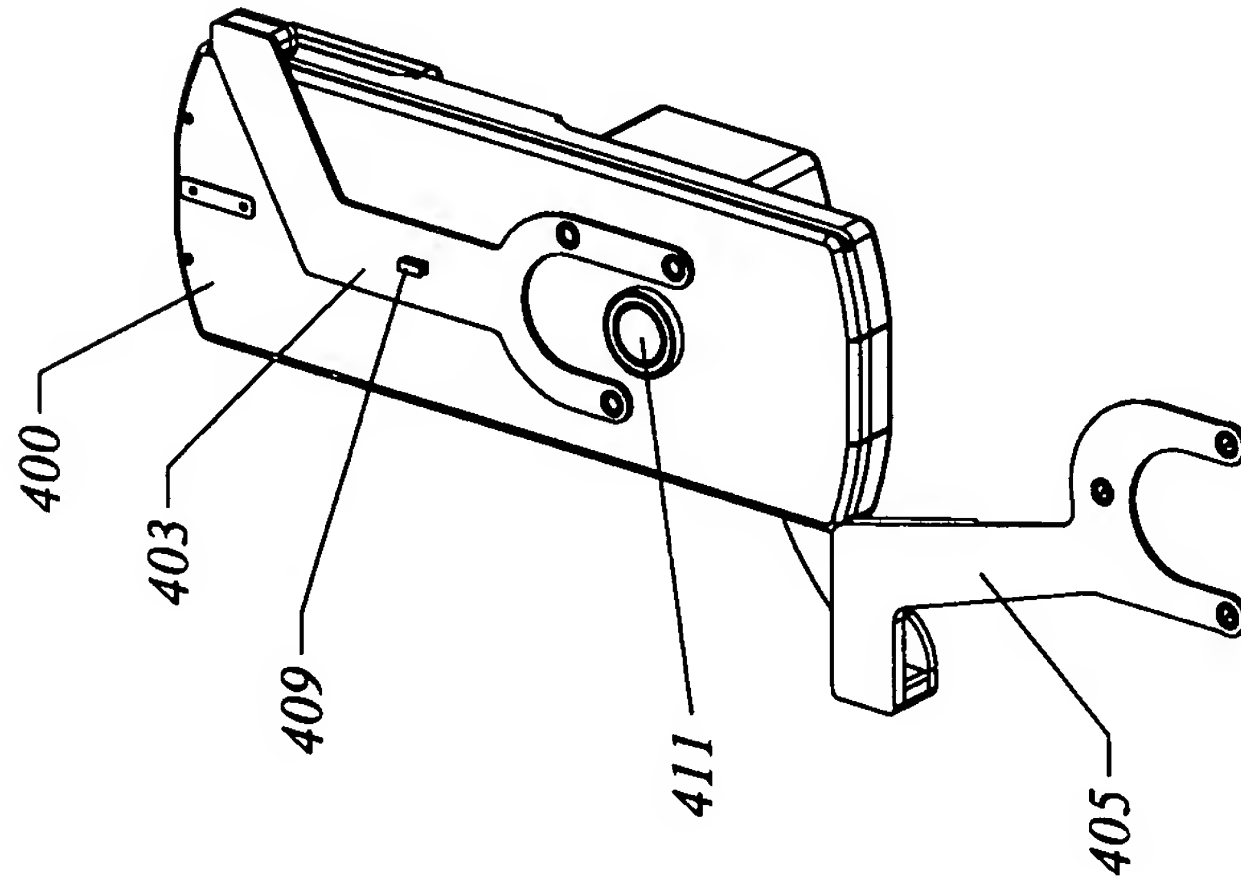


FIG. 26B

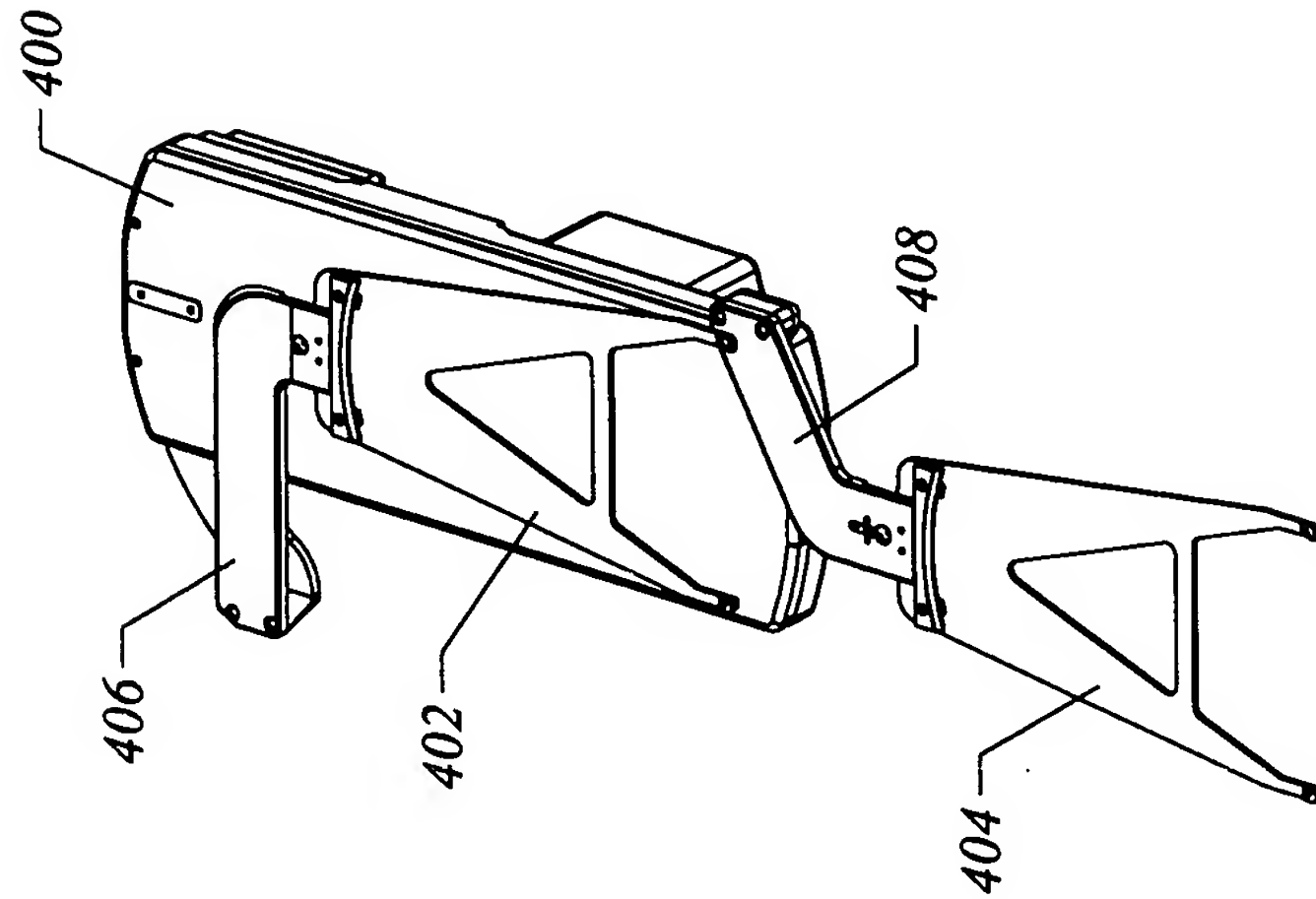


FIG. 26A

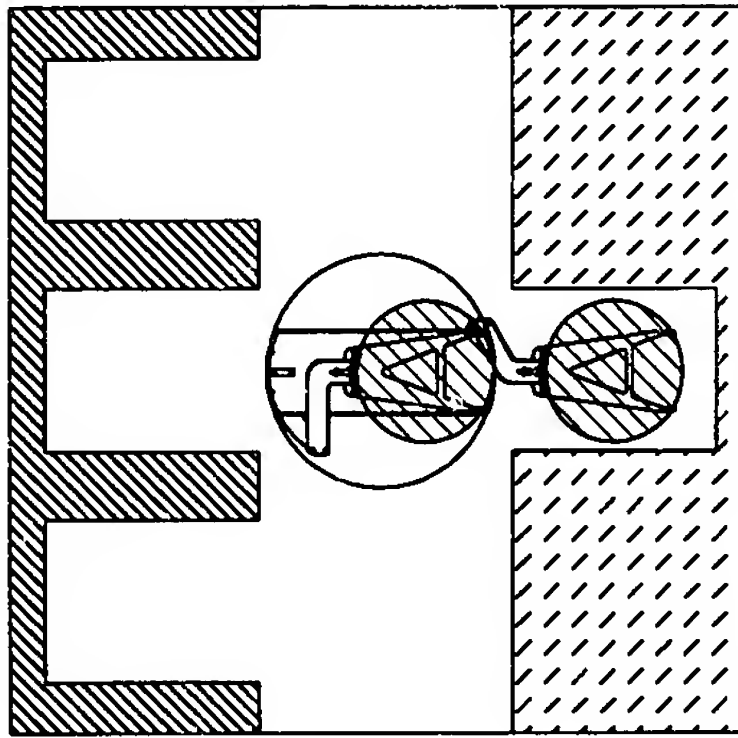
200E20"26028001

200240" 2604300T

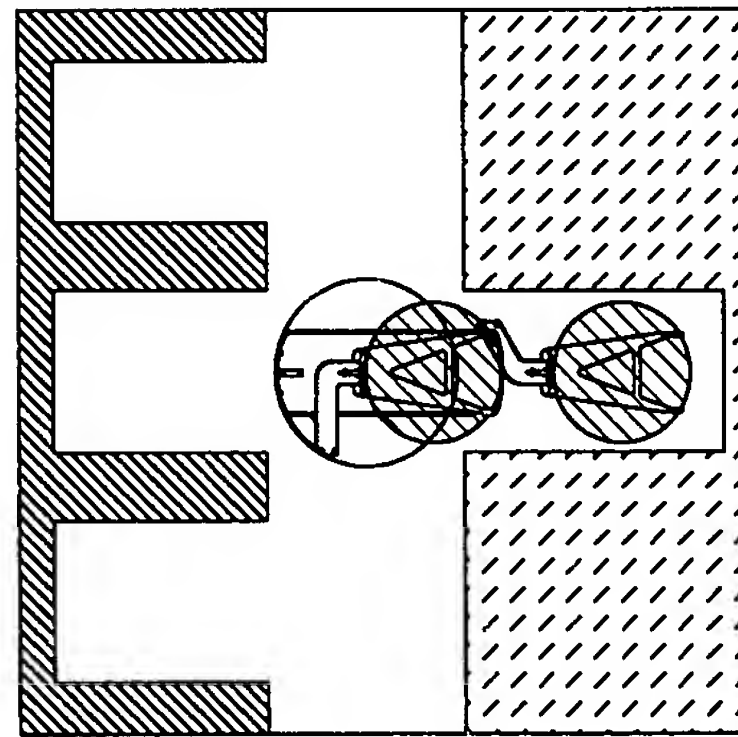


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Conventional Linear Slide Robot



Off-Center Side-Body (50mm offset)



EFEM Process Tool

FIG. 27A

FIG. 27B

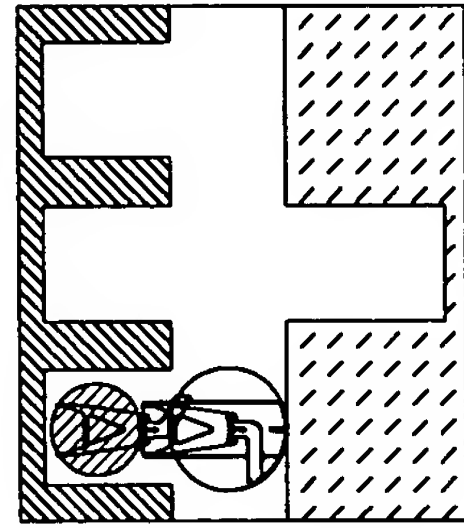
2002/07/30 "2002/07/30"



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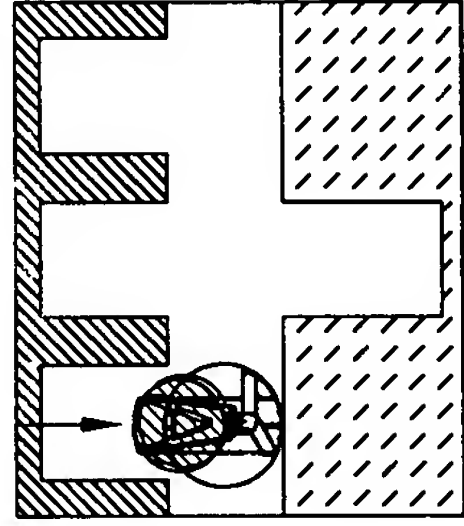
Title: SEMICONDUCTOR MATERIAL HANDLING SYSTEM
Inventor: Anthony C. Bonora Docket No.: 3474
Serial No.: 10/087,092 Attorney: Scott D. [redacted]
Filed: March 1, 2002 Telephone: 415-984-8700
Sheet 29 of 34

Example motion sequence for rapid swap slide-body with off center rotation axis.



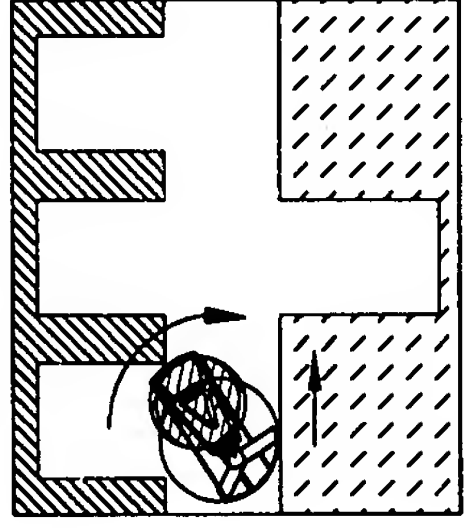
lift wafer at
load port 1

FIG. 28-1



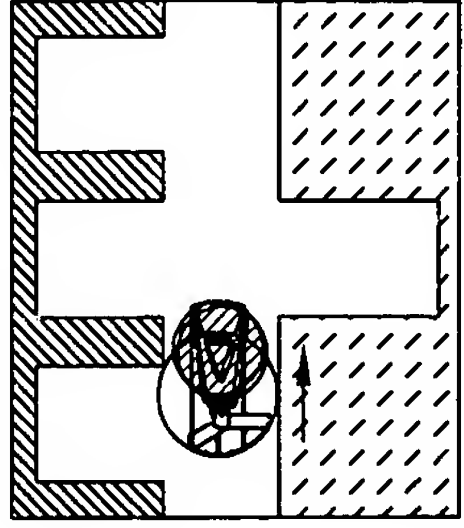
retract radial axis

FIG. 28-2



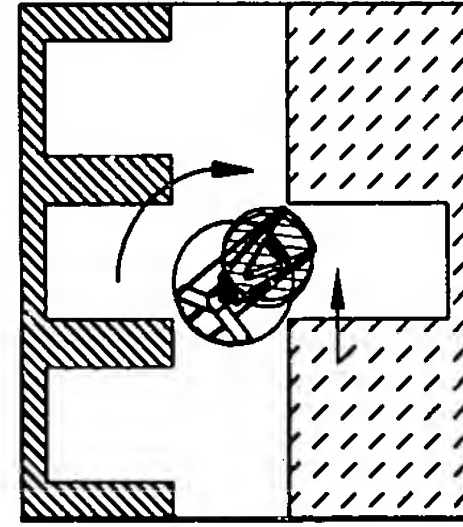
rotate theta axis
and move X axis
back to avoid
collision

FIG. 28-3



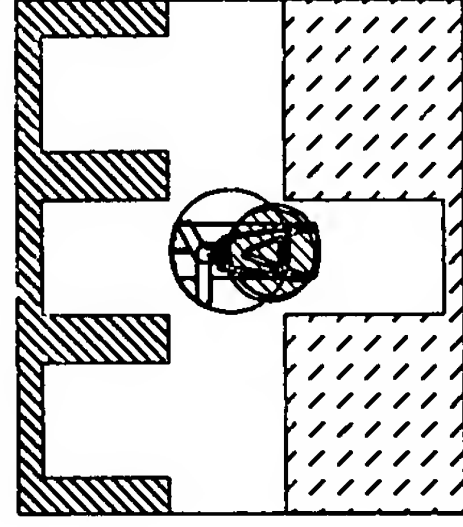
move X axis
forward toward
process station

FIG. 28-4



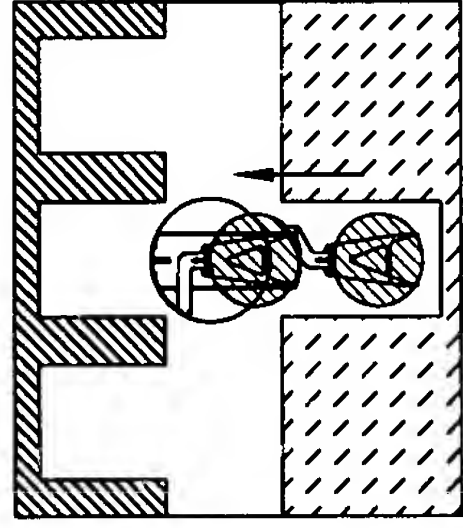
rotate theta axis
and move X axis

FIG. 28-5



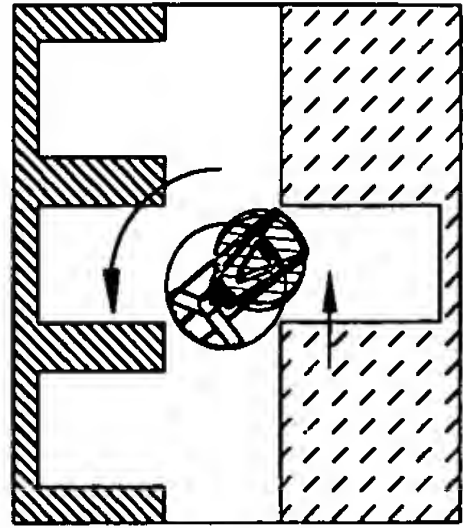
wall for process
to complete

FIG. 28-6



swap processed
wafer for new
wafer ready
for process

FIG. 28-7



retract radical
axis, move X and Theta

FIG. 28-8





Title: SEMICONDUCTOR MATERIAL HANDLING SYSTEM
Inventor: Anthony C. Bonora Docket No.: 34741-774
Serial No.: 10/087,092 Attorney: Scott D. Sanford
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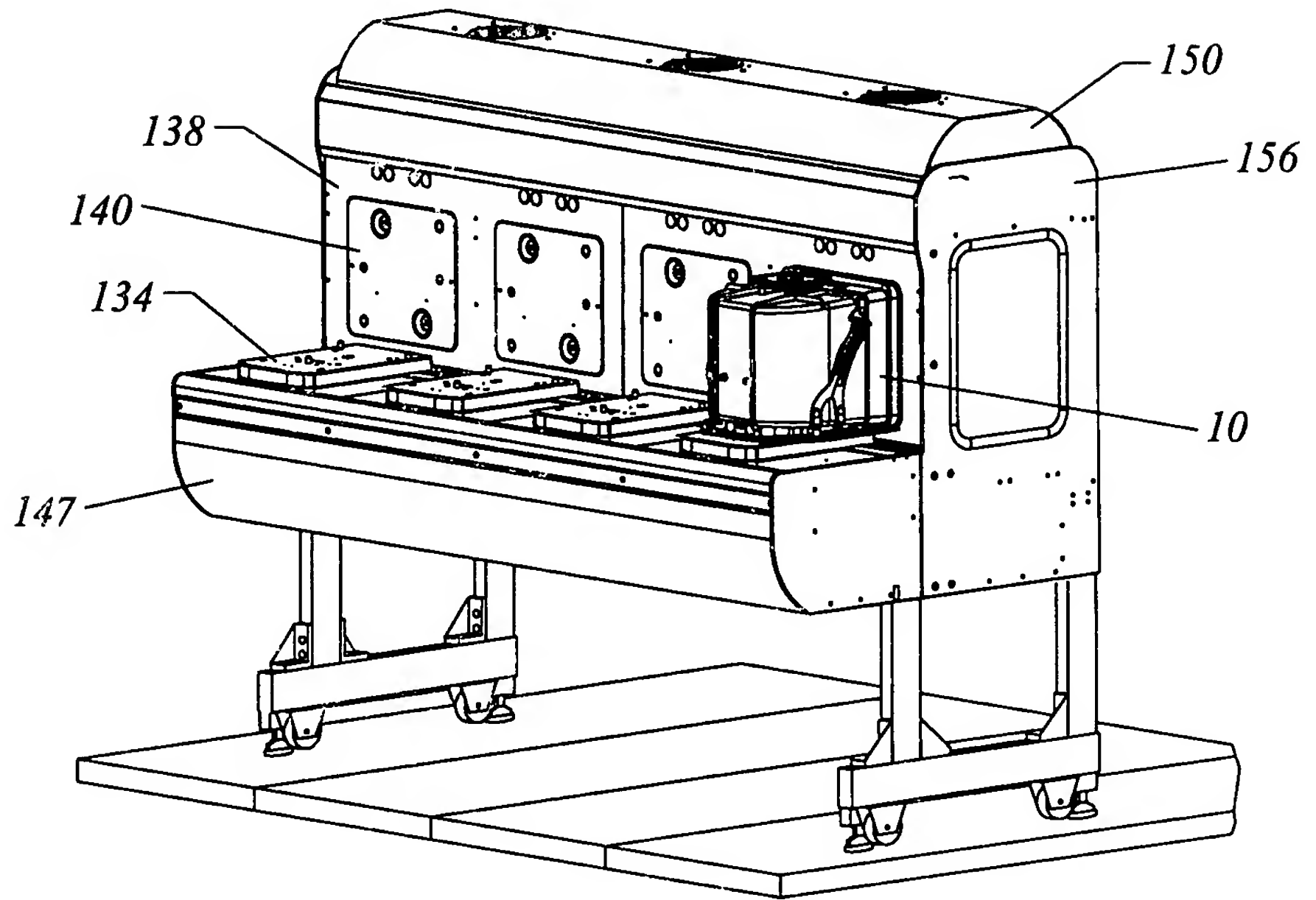


FIG. 29A



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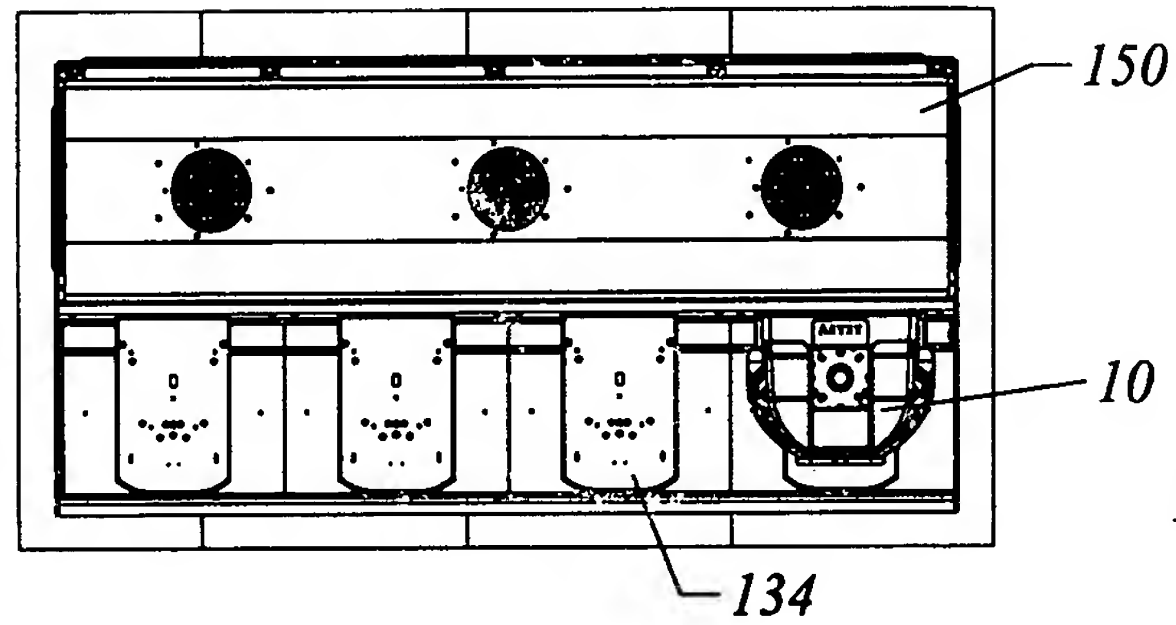


FIG. 29D

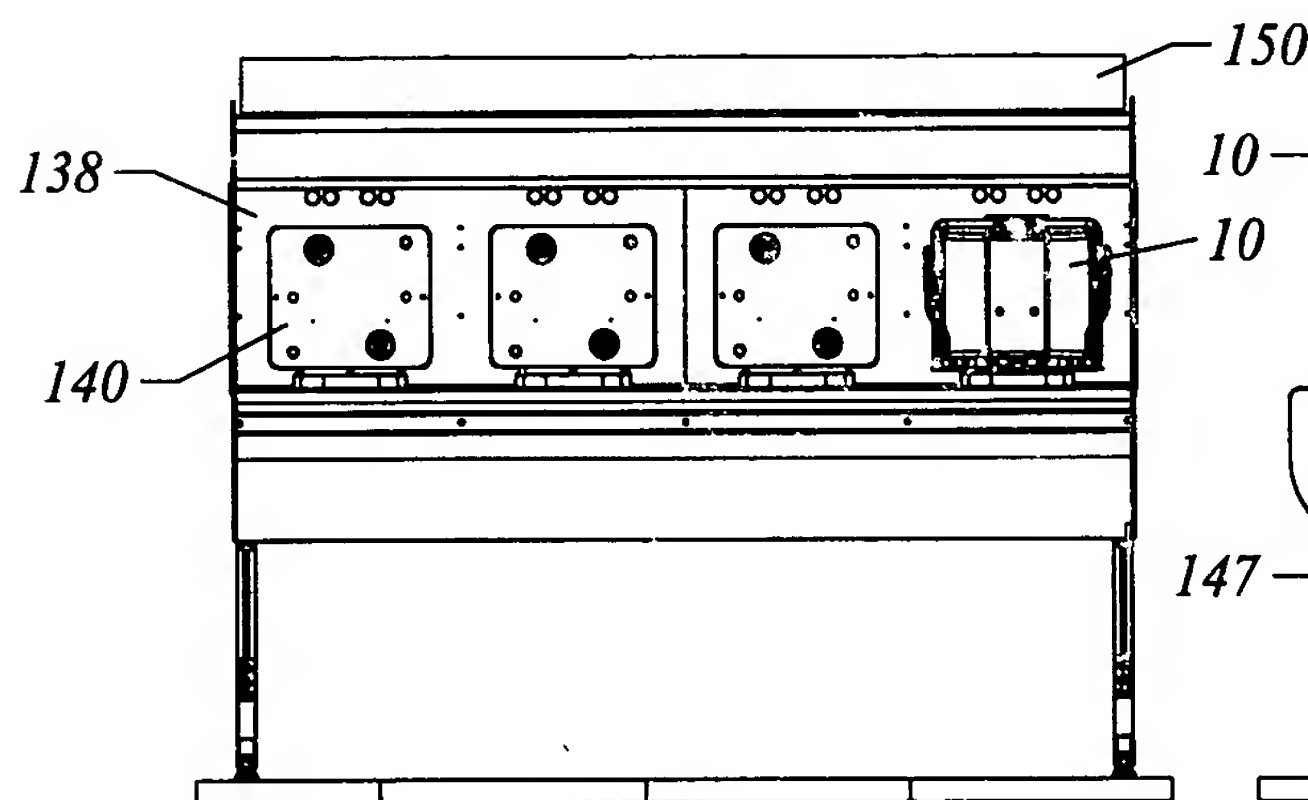


FIG. 29B

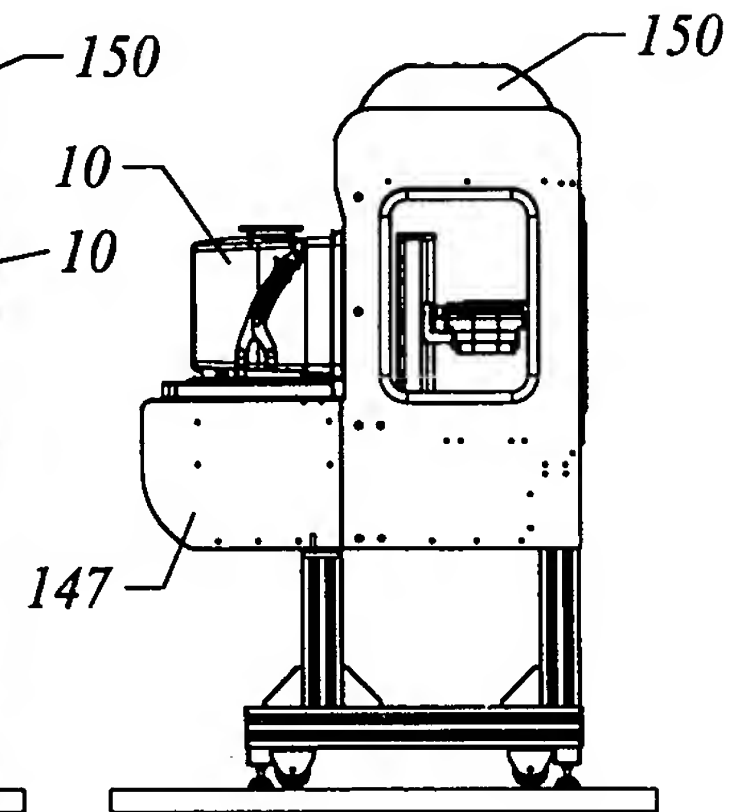


FIG. 29C

20020320-030300K



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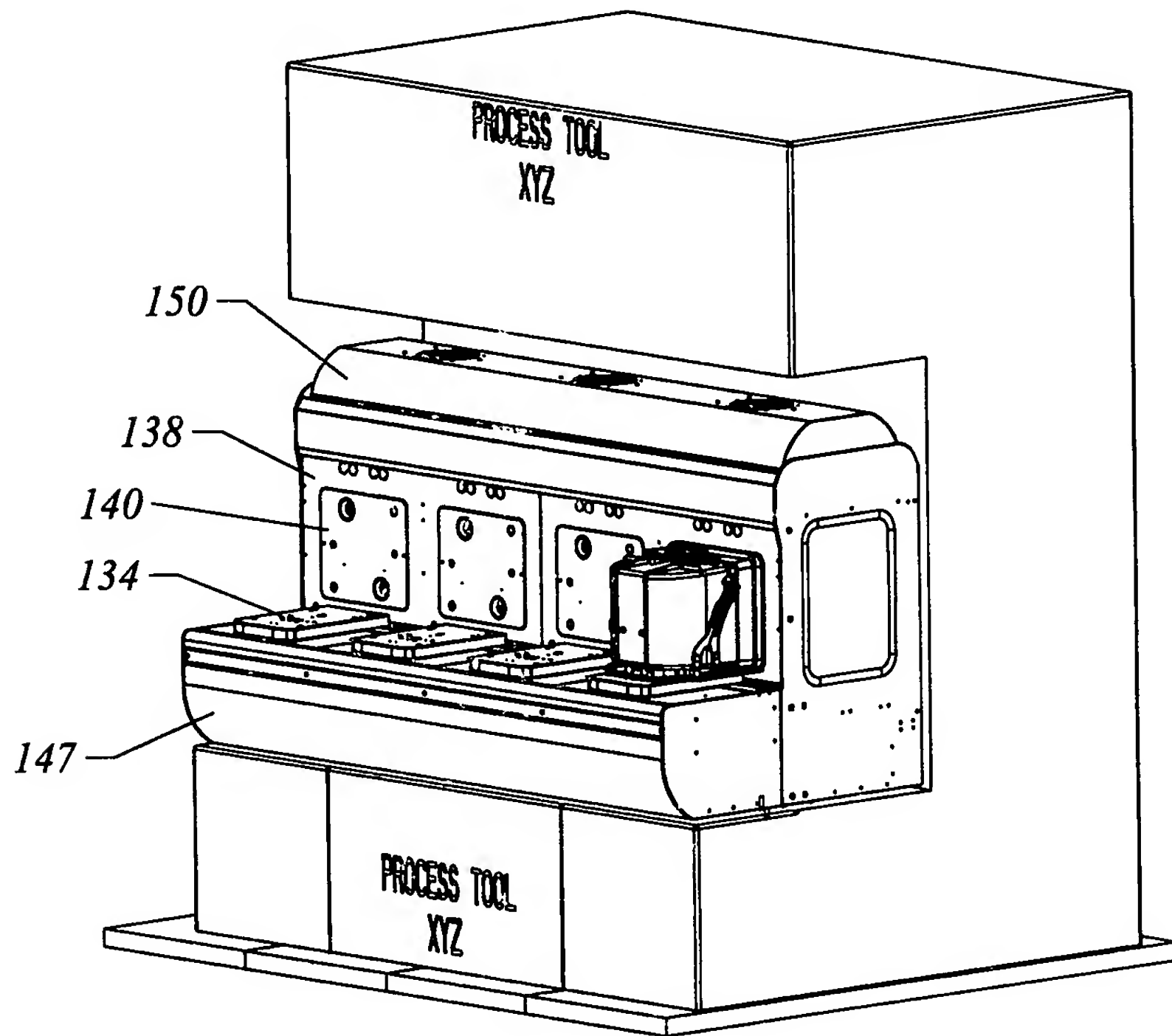


FIG. 30A

20020326023001



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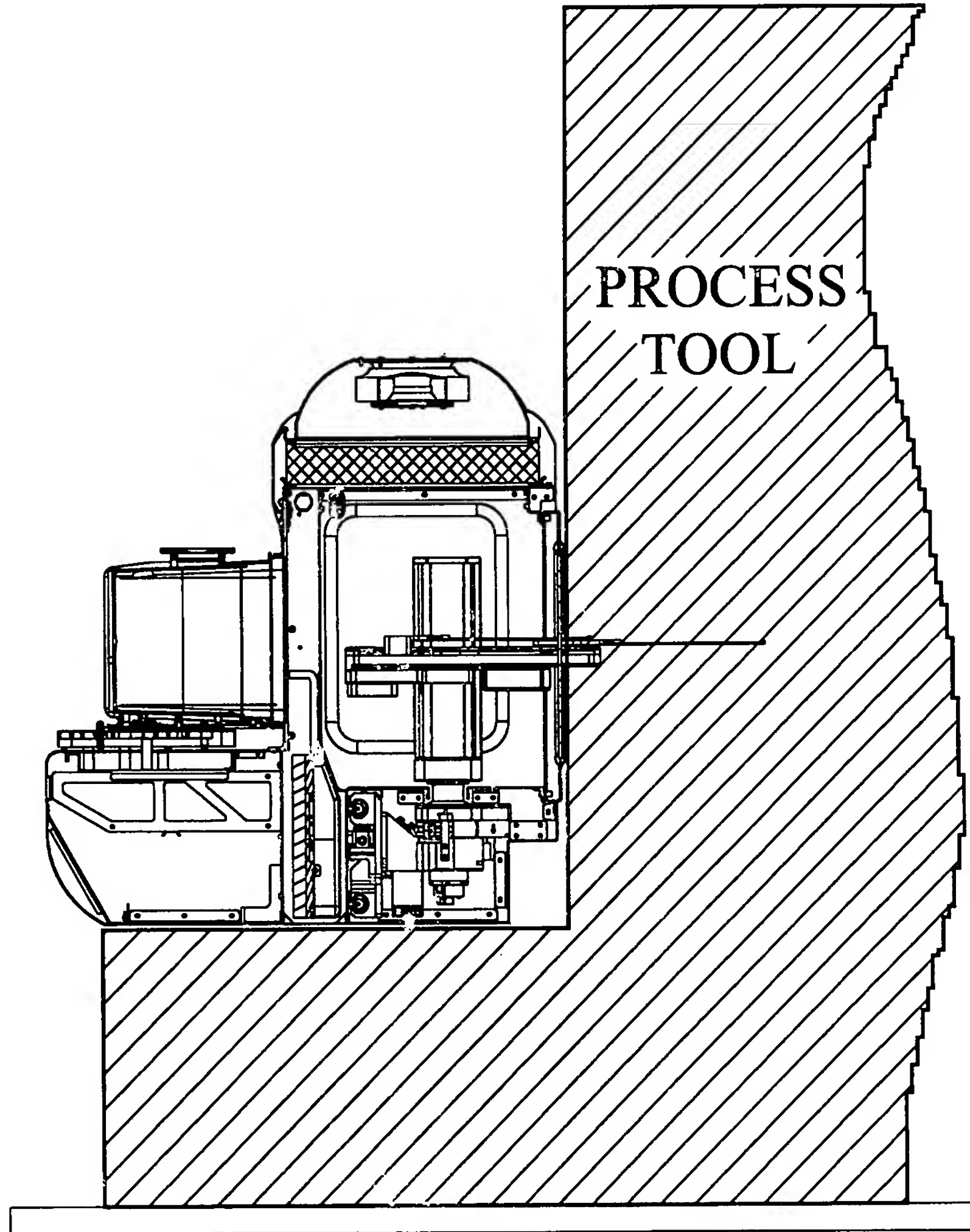


FIG. 30B

20020726028001



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